



White Sands National Monument Visitor Study

Summer 2012

Natural Resource Report NPS/NRSS/EQD/NRR—2013/642



ON THE COVER

Ripples in the sand and a soaptree yucca, iconic symbols of White Sands National Monument
Photograph by: R. Wiles

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Natural Resource Report NPS/NRSS/EQD/NRR—2013/642

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Executive Summary

This visitor study report profiles a systematic random sample of White Sands National Monument visitors during July 17-23, 2012. A total of 477 questionnaires were distributed to visitor groups. Of those, 226 questionnaires were returned, resulting in a 51.4% response rate.

Group size and type	Thirty percent of visitor groups consisted of two people and 21% were in groups of four. Seventy-two percent of visitor groups consisted of family groups.
State or country of residence	United States visitors were from 34 states, Washington, DC, and Puerto Rico, and comprised 90% of total visitation during the survey period, with 41% from Texas. International visitors were from 16 countries and comprised 10% of total visitation during the survey period with 23% from Germany.
Frequency of visits	Eighty percent of visitors visited the park once in the past 12 months and 58% were visiting for the first time. Sixteen percent had visited two times in their lifetime.
Age, ethnicity, race, and educational level	Twenty-six percent of visitors were ages 41-60 years, 25% were ages 15 years or younger, 23% were ages 21-40 years, and 7% were 71 years or older. Twenty-one percent of visitors were Hispanic or Latino. Ninety-two percent of visitors were White, 3% were Asian, and 3% were Black or African American. Thirty-two percent of respondents had completed some college, 32% had a bachelor's degree, and 29% had a graduate degree.
Awareness of park prior to visit	Seventy-eight percent of visitor groups were aware prior to their visit that White Sands National Monument is part of the National Park System.
Information sources	Most visitor groups (80%) obtained information about the park prior to their visit through friends/relatives/word of mouth (48%) and previous visits (44%). Most of these visitor groups (91%) received the information they needed. For a future visit, 59% of visitor groups prefer to use the park website to obtain information.
Park website	Forty-two percent of visitor groups obtained information from the park website to plan their trip. Of those, 80% rated the quality of the website as "very good" or "good" and most visitors (91%) found the information they needed.
Park as destination	For 55% of visitor groups, the park was one of several destinations, and for 34%, the park was the primary destination.
Primary reason for visiting the area	Eleven percent of visitor groups were residents of the area (Alamogordo, Tularosa, Las Cruces). For 48% of nonresident group members, visiting the park was the primary reason for visiting the area.
Services used in nearby communities	Most visitor groups (91%) obtained support services in nearby communities. The communities most often used were Alamogordo (56%), Las Cruces (31%), and Ruidoso (23%).

Executive Summary (continued)

Transportation	Fifty-eight percent of non-resident visitor group members used a private car to travel most of the distance from their home to the park area. Most visitor groups (88%) used one vehicle to arrive at the park.
Number of entries	Most visitor groups (87%) entered the park one time and 9% entered twice.
Overnight stays	Forty-two percent of visitor groups stayed overnight away from their permanent residence in the White Sands National Monument area (Alamogordo, Tularosa, Las Cruces), of which 60% stayed one night. Sixty-nine percent of visitor groups stayed in a lodge, motel, rented condo/home, cabin, B&B, etc. outside the park area.
Length of stay	Thirty percent of visitor groups spent two hours in the park. The average length of stay was 3.3 hours. Twelve percent of visitor groups visited the park on more than one day.
Local attractions visited	Sixty-eight percent of visitor groups visited other attractions in the local area. The most commonly visited attractions were Cloudcroft, Sacramento Mts. (54%), Ruidoso, Sacramento Mts. (41%), and Lincoln National Forest (41%).
Places visited	The most commonly visited places in the park were the visitor center/bookstore (73%), the Dunes Drive (73%), and the gift store (59%).
Activities on this visit	The most common activities were general sightseeing (77%), stopping at scenic overlooks/pullouts (52%), and shopping in the park gift store (47%). The most important activity was general sightseeing (39%).
Activities on future visit	On a future visit, 64% percent of visitor groups were interested in general sightseeing and 63% were interested in sledding the dunes.
Ranger-led activities/ programs	Twelve percent of visitor groups attended ranger-led activities/programs at the park. Of those visitor groups who did not attend ranger-led activities/programs, 71% did not attend due to a lack of time. On a future visit, 57% of visitor groups would likely be interested in attending ranger-led programs and of those, 61% would be interested in a program length of 1/2-1 hour. Thirty-five percent of visitor groups would be interested in interpretive services/programs on a future visit.
Visitor services and facilities	The visitor services and facilities most commonly used by visitor groups were restrooms (79%), park brochure/map (69%), and the gift shop (53%).
Park gift store sales items	Fifteen percent of visitor groups bought food items from the park gift store. Of those, 67% rated the quality as “very good” or “good.” Thirty-eight percent of visitor groups would prefer to have more picnic items available on a future visit.
Protecting park attributes, resources, and experiences	The highest combined proportions of “extremely important” and “very important” ratings of protecting natural, scenic, and cultural resources included clean water (97%), clean air (visibility) (96%), and scenic views (95%).

Executive Summary (continued)

Expenditures	The average visitor group expenditure (inside and outside the park) was \$291. The median group expenditure (50% of groups spent more and 50% of groups spent less) was \$108, and the average total expenditure per person (per capita) was \$88.
Overall quality	Most visitor groups (91%) rated the overall quality of facilities, services, and recreational opportunities at White Sands National Monument as “very good” or “good.” Less than 1% of groups rated the overall quality as “very poor” or “poor.”

For more information about the Visitor Services Project, please contact the Park Studies Unit at the University of Idaho at (208) 885-2585 or the following website <http://www.psu.uidaho.edu>.

Acknowledgements

We thank Ally Begly for compiling the report, Beth Barrie for overseeing the fieldwork, Robert Sandlin and the staff and volunteers of White Sands National Monument for assisting with the survey, and Matthew Strawn for data processing.

About the Authors

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Introduction

This report describes the results of a visitor study at White Sands National Monument in Alamogordo, NM conducted July 17-23, 2012 by the National Park Service (NPS) Visitor Services Project (VSP), part of the Park Studies Unit (PSU) at the University of Idaho.

As described in the National Park Service website for White Sands National Monument, “Rising from the heart of the Tularosa Basin is one of the world's great natural wonders - the glistening white sands of New Mexico. Great wave-like dunes of gypsum sand have engulfed 275 square miles of desert, creating the world's largest gypsum dunefield. White Sands National Monument preserves a major portion of this unique dune field, along with the plants and animals that live here.” (www.nps.gov/whsa, retrieved January 2013).

Organization of the Report

This report is organized into three sections.

Section 1: Methods

This section discusses the procedures, limitations, and special conditions that may affect the study results.

Section 2: Results

This section provides a summary for each question in the questionnaire and includes visitor comments to open-ended questions. The presentation of the results of this study does not follow the order of questions in the questionnaire.

Section 3: Appendices

Appendix 1. *The Questionnaire*. A copy of the questionnaire distributed to visitor groups.

Appendix 2. *Additional Analysis*. A list of sample questions for cross-references and cross comparisons. Comparisons can be analyzed within a park or between parks. Results of additional analyses are not included in this report.

Appendix 3. *Decision Rules for Checking Non-response Bias*. An explanation of how the non-response bias was determined.

Presentation of the Results

Results are represented in the form of graphs (see Example 1), scatter plots, pie charts, tables, and text.

Key

1. The figure title describes the graph's information.
2. Listed above the graph, the "N" shows the number of individuals or visitor groups responding to the question. If "N" is less than 30, "**CAUTION!**" is shown on the graph to indicate the results may be unreliable.

* appears when the total percentages do not equal 100 due to rounding.

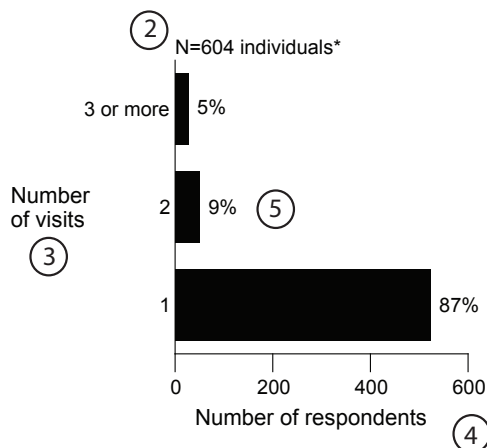
** appears when total percentages do not equal 100 because visitors could select more than one answer choice.

3. Vertical information describes the response categories.

4. Horizontal information shows the number or proportion of responses in each category.

5. In most graphs, percentages provide additional information.

Example 1



① **Figure 14.** Number of visits to the park in past 12 months

Methods

Survey Design and Procedures

Sample size and sampling plan

All VSP questionnaires follow design principles outlined in Don A. Dillman's book *Mail and Internet Surveys: The Tailored Design Method* (2007). Using this method, the sample size was calculated based on the park visitation statistics of previous years.

Brief interviews were conducted with a systematic, random sample of visitor groups that arrived at the main entrance during July 17-23, 2012. Visitors were surveyed between the hours of 9 a.m. and 5 p.m. During this survey, 477 visitor groups were contacted and 440 of these groups (92.2%) accepted questionnaires. (The average acceptance rate for 250 VSP visitor studies conducted from 1988 through 2011 is 91.5%.) Questionnaires were completed and returned by 226 respondents, resulting in a 51.4% response rate for this study. (The average response rate for the 250 VSP visitor studies is 72.3%.)

Questionnaire design

The White Sands National Monument questionnaire was developed at a workshop held with park staff to design and prioritize questions. Some of the questions were comparable with VSP studies conducted at other parks while others were customized for White Sands National Monument. Many questions ask respondents to choose answers from a list of responses, often with an open-ended option, while others are completely open-ended.

No pilot study was conducted to test the White Sands National Monument questionnaire. However, all questions followed Office Management and Budget (OMB) guidelines and/or were used in previous surveys; thus, the clarity and consistency of the survey instrument have been tested and supported.

Survey procedure

Visitor groups were greeted, briefly introduced to the purpose of the study, and asked to participate. If visitors agreed, they were asked which member (at least 16 years old) had the next birthday. The individual with the next birthday was selected to complete the questionnaire for the group. An interview, lasting approximately two minutes, was conducted with that person to determine group size, group type, the age of the member completing the questionnaire, and how this visit to the park fit into their group's travel plans. These individuals were asked their names, addresses, and telephone numbers or email addresses in order to mail them a reminder/thank-you postcard and follow-ups. Participants were asked to complete the survey after their visit, and return it using the Business Reply Mail envelope provided.

Two weeks following the survey, a reminder/thank-you postcard was mailed to all participants who provided a valid mailing address (see Table 1). Replacement questionnaires were mailed to participants who had not returned their questionnaires four weeks after the survey. Seven weeks after the survey, a second round of replacement questionnaires was mailed to participants who had not returned their questionnaires.

Table 1. Follow-up mailing distribution

Mailing	Date	U.S.	International	Total
Postcards	August 7, 2012	385	29	414
1 st replacement	August 21, 2012	272	18	290
2 nd replacement	September 11, 2012	228	0	228

Data analysis

Returned questionnaires were coded and the responses were processed using custom and standard statistical software applications—Statistical Analysis Software® (SAS), and a custom designed FileMaker Pro® application. Descriptive statistics and cross-tabulations were calculated for the coded data; responses to open-ended questions were categorized and summarized. Double-key data entry validation was performed on numeric and text entry variables and the remaining checkbox (bubble) variables were read by optical mark recognition (OMR) software.

Limitations

As with all surveys, this study has limitations that should be considered when interpreting the results.

1. This was a self-administered survey. Respondents completed the questionnaire after their visit, which may have resulted in poor recall. Thus, it is not possible to know whether visitor responses reflected actual behavior.
2. The data reflect visitor use patterns at the selected sites during the study period of July 17-23, 2012. The results present a 'snapshot in time' and do not necessarily apply to visitors during other times of the year.
3. Caution is advised when interpreting any data with a sample size of less than 30, as the results may be unreliable. When the sample size is less than 30, the word "**CAUTION!**" is included in the graph, figure, table, or text.
4. Occasionally, there may be inconsistencies in the results. Inconsistencies arise from missing data or incorrect answers (due to misunderstood directions, carelessness, or poor recall of information). Therefore, refer to both the percentage and N (number of individuals or visitor groups) when interpreting the results.

Special conditions

The weather during the survey period was sunny and hot, with temperatures in the 90-100 degree range, with occasional overcast and stormy periods. No special events occurred in the area that would have affected the type and amount of visitation to the park.

Checking non-response bias

Five variables were used to check non-response bias: participant age, group size, group type, park as destination, and participant travel distance to the park. Respondents and non-respondents were not significantly different except for average age (see Table 2 - Table 5). There may be some potential bias toward visitors at higher age range (50 years old and over). See Appendix 3 for more details on the non-response bias checking procedures.

Table 2. Comparison of respondents and non-respondents by average age and group size

Variable	Respondents	Non-respondents	p-value (t-test)
Age (years)	49.51 (N=226)	37.98 (N=214)	<0.001
Group size	4.10 (N=221)	4.55 (N=210)	0.139

Table 3. Comparison of respondents and non-respondents by group type

Group type	Respondents	Non-respondents	p-value (chi-square)
Alone	10 (5%)	15 (7%)	0.406
Family	159 (72%)	144 (68%)	
Friends	21 (10%)	27 (13%)	
Family and friends	31 (14%)	25 (12%)	

Table 4. Comparison of respondents and non-respondents by primary destination

Destination	Respondents	Non-respondents	p-value (chi-square)
Park as primary destination	69 (31%)	80 (37%)	0.074
Park as one of several destinations	135 (60%)	105 (49%)	
Unplanned visit	22 (10%)	29 (14%)	

Table 5. Comparison of respondents and non-respondents by distance from home to park

Destination	Respondents	Non-respondents	p-value (chi-square)
Within 50 miles	29 (13%)	23 (12%)	0.492
51-100 miles	46 (21%)	41 (21%)	
101-200 miles	11 (5%)	19 (10%)	
201 miles or more	119 (54%)	102 (51%)	
International visitors	16 (7%)	14 (7%)	

Results

Group and Visitor Characteristics

Visitor group size

Question 20b

On this visit, how many people were in your personal group, including yourself?

Results

- 43% of visitor groups consisted of two or three people (see Figure 1).
- 33% were in groups of four or five.
- 18% were in groups of six or more.

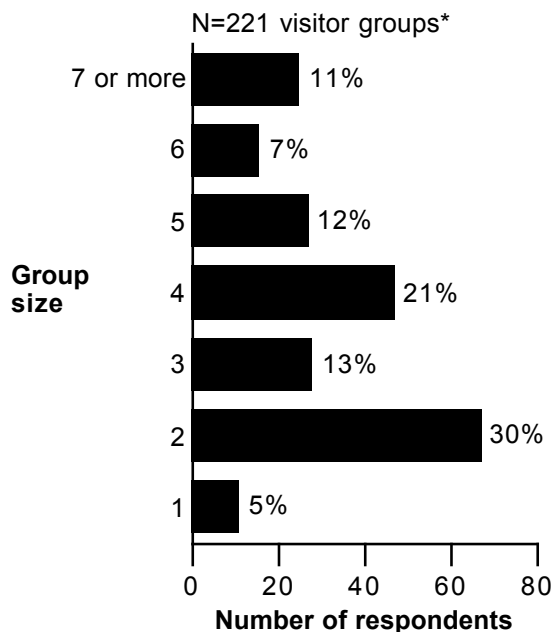


Figure 1. Visitor group size

Visitor group type

Question 20a

On this visit, which type of personal group (not guided tour/school/other organized group) were you with?

Results

- 72% of visitor groups consisted of family members (see Figure 2).
- 14% were with family and friends.

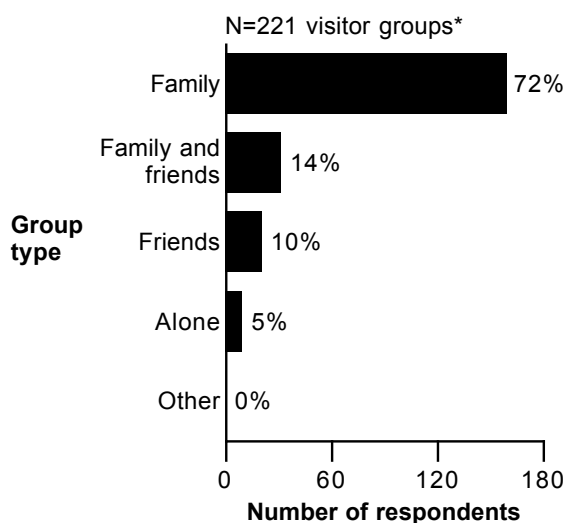


Figure 2. Visitor group type

Visitors with organized groups

Question 19a

On this visit, was your personal group with a commercial guided tour group?

Results

- No visitor groups were with a commercial guided tour group (see Figure 3).

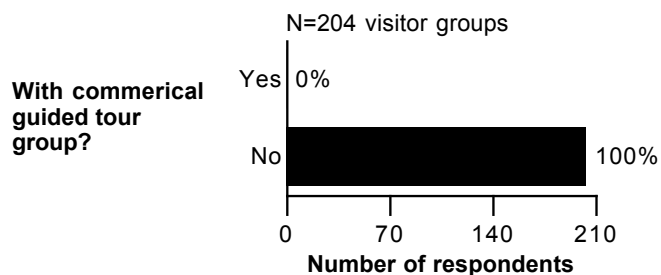


Figure 3. Visitors with a commercial guided tour group

Question 19b

On this visit, was your personal group with a school/educational group?

Results

- 1% of visitor groups were with a school/educational group (see Figure 4).

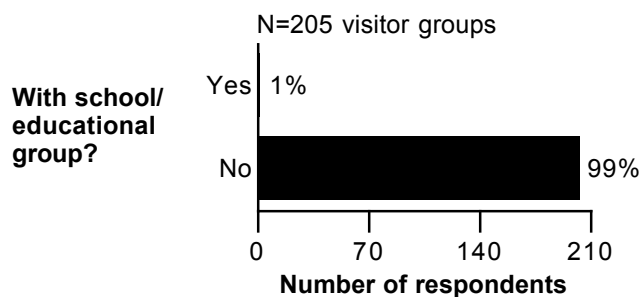


Figure 4. Visitors with a school/educational group

Question 19c

On this visit, was your personal group with an "other" organized group (scouts, work, church, etc.)?

Results

- 2% of visitor groups were with an "other" organized group (see Figure 5).

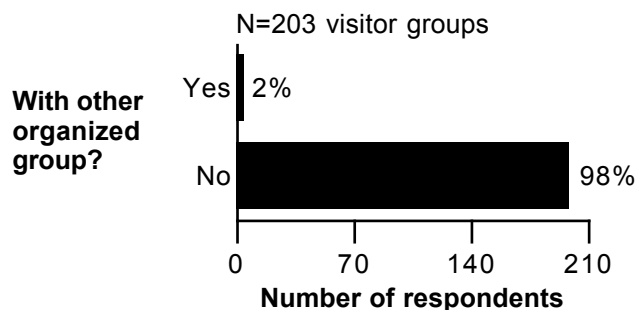


Figure 5. Visitors with an "other" organized group

Question 19d

If you were with one of these organized groups, how many people, including yourself, were in this group?

Results – Interpret with CAUTION!

- Not enough visitor groups responded to this question to provide reliable results (see Figure 6).

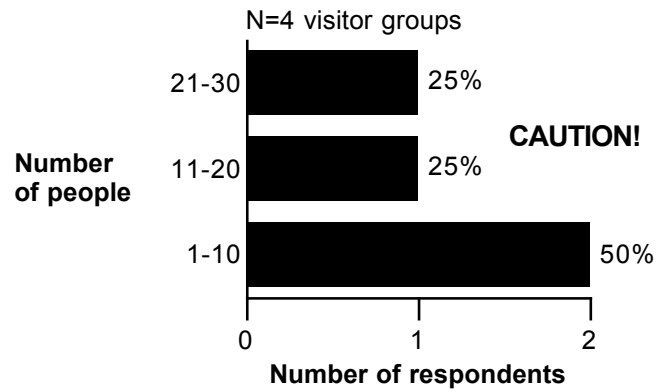


Figure 6. Organized group size

United States visitors by state of residence

Question 24b

For your personal group on this visit, what is your state of residence?

Note: Response was limited to seven members from each visitor group.

Results

- U.S. visitors were from 34 states, Washington, DC, and Puerto Rico and comprised 90% of total visitation to the park during the survey period.
- 41% of U.S. visitors came from Texas and 26% came from New Mexico (see Table 6 and Figure 7).
- 41% came from Texas and 5% were from California.
- Smaller proportions came from 32 other states, Washington, DC, and Puerto Rico.

Table 6. United States visitors by state of residence

State	Number of visitors	Percent of U.S. visitors N=641 individuals*	Percent of total visitors N=714 individuals
Texas	265	41	37
New Mexico	164	26	23
California	31	5	4
Washington	18	3	3
Florida	17	3	2
Arizona	16	2	2
Oklahoma	16	2	2
Kentucky	9	1	1
Georgia	8	1	1
Missouri	8	1	1
Iowa	6	1	1
Kansas	6	1	1
Wisconsin	6	1	1
Hawaii	5	1	1
Michigan	5	1	1
New Jersey	5	1	1
New York	5	1	1
Connecticut	4	1	1
Illinois	4	1	1
South Carolina	4	1	1
Utah	4	1	1
13 other states, Washington, DC, and Puerto Rico	35	5	5

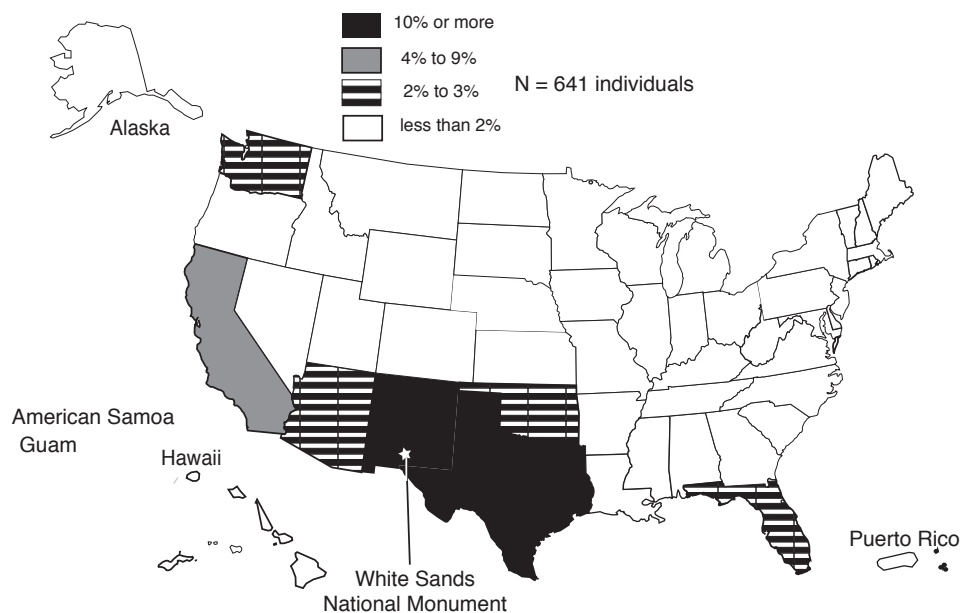


Figure 7. United States visitors by state of residence

Visitors from New Mexico and adjacent states by county of residence

Note: Response was limited to seven members from each visitor group.

Table 7. Visitors from New Mexico and adjacent states by county of residence

Results

- Visitors from New Mexico and adjacent states were from 62 counties and comprised 72% of the total U.S. visitation to the park during the survey period.
- 14% of visitors came from El Paso County, TX (see Table 7).
- 13% came from Otero County, NM.
- Small proportions of visitors came from 60 other counties in New Mexico and adjacent states.

County, State	Number of visitors N=463 individuals	Percent*
El Paso, TX	67	14
Otero, NM	58	13
Dona Ana, NM	45	10
Bernalillo, NM	17	4
Harris, TX	15	3
Tarrant, TX	15	3
Travis, TX	14	3
Bexar, TX	11	2
Fort Bend, TX	11	2
Dallas, TX	10	2
Young, TX	10	2
Lincoln, NM	9	2
Pima, AZ	9	2
Eddy, NM	7	2
Lubbock, TX	7	2
Nueces, TX	7	2
46 other counties	151	33

International visitors by country of residence

Question 24b

For your personal group on this visit, what is your country of residence?

Table 8. International visitors by country of residence

Note: Response was limited to seven members from each visitor group.

Results

- International visitors were from 16 countries and comprised 10% of total visitation to the park during the survey period.
- 23% of international visitors came from Germany (see Table 8).
- 18% came from The Netherlands.
- 10% came from Belgium.
- Smaller proportions of international visitors came from 13 other countries.

Country	Number of visitors	Percent of international visitors N=73 individuals*	Percent of total visitors N=714 individuals
Germany	17	23	2
The Netherlands	13	18	2
Belgium	7	10	1
Colombia	6	8	1
Singapore	5	7	1
Sweden	4	5	1
Switzerland	3	4	<1
Canada	2	3	<1
Costa Rica	2	3	<1
Czech Republic	2	3	<1
France	2	3	<1
Hungary	2	3	<1
Mexico	2	3	<1
Poland	2	3	<1
Spain	2	3	<1
United Kingdom	2	3	<1

Number of visits to park in past 12 months

Question 24c

For your personal group on this visit, how many times have you visited White Sands National Monument in the past 12 months (including this visit)?

Note: Response was limited to seven members from each visitor group.

Results

- 80% of visitors visited the park once in the past 12 months (see Figure 8).
- 14% visited two or three times.

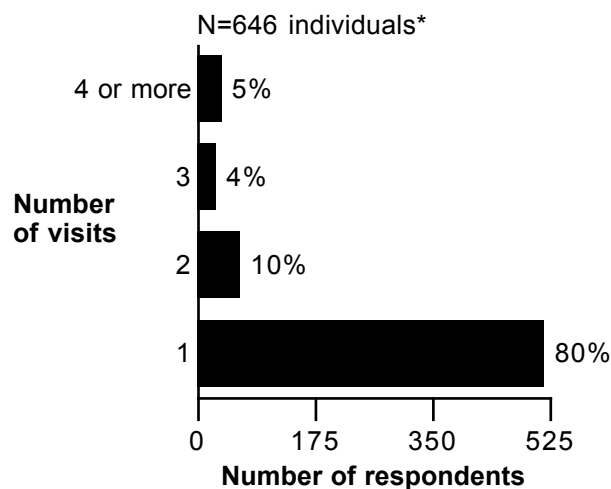


Figure 8. Number of visits to park in past 12 months

Number of visits to park in lifetime

Question 24d

For your personal group on this visit, how many times have you visited White Sands National Monument in your lifetime (including this visit)?

Note: Response was limited to seven members from each visitor group.

Results

- 58% of visitors were visiting the park for the first time (see Figure 9).
- 23% visited two or three times.
- 18% visited four or more times.

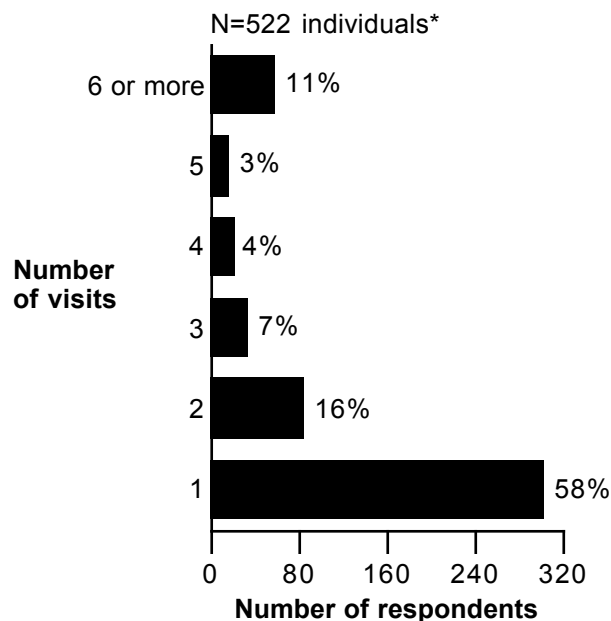


Figure 9. Number of visits to park in lifetime

Visitor age

Question 24a

For your personal group on this visit, what is your current age?

Note: Response was limited to seven members from each visitor group.

Results

- Visitor ages ranged from 1 to 91 years.
- 26% of visitors were 41 to 60 years old (see Figure 10).
- 25% were 15 years or younger.
- 23% were ages 21-40 years.
- 22% were 61 years or older.

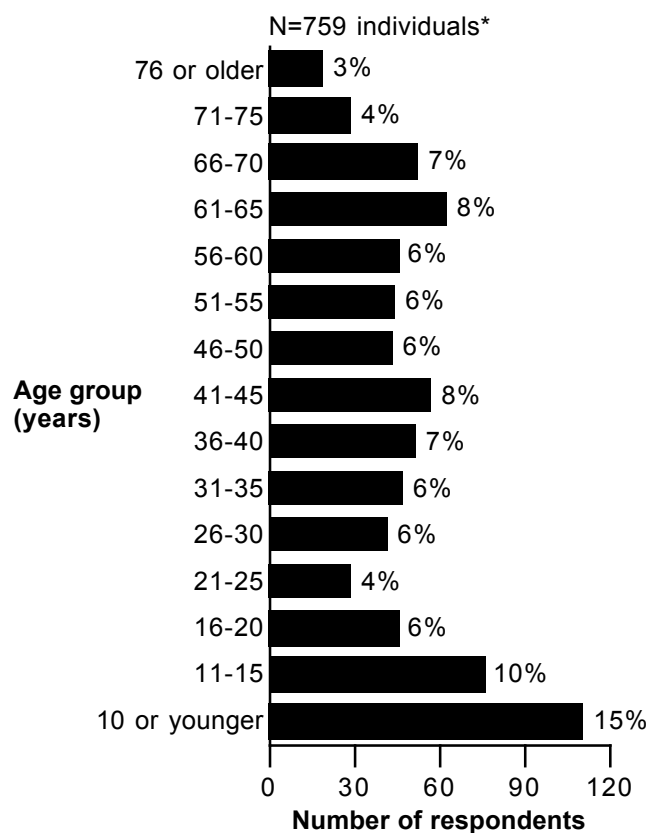


Figure 10. Visitor age

Visitor ethnicity

Question 25a

Are members of your personal group Hispanic or Latino?

Note: Response was limited to seven members from each visitor group.

Results

- 21% of visitors were Hispanic or Latino (see Figure 11).

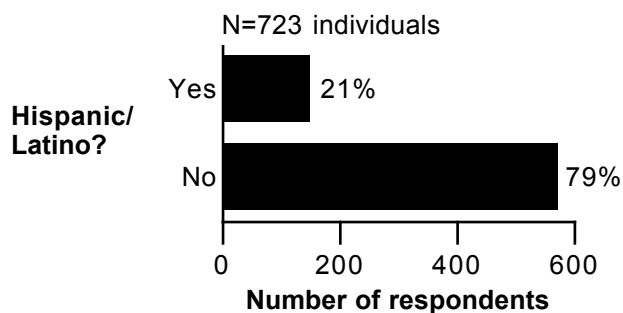


Figure 11. Visitor ethnicity

Visitor race

Question 25b

What is the race of each member of your personal group?

Note: Response was limited to seven members from each visitor group.

Results

- 92% of visitors were White (see Figure 12).
- 3% were Asian.
- 3% were Black or African American.

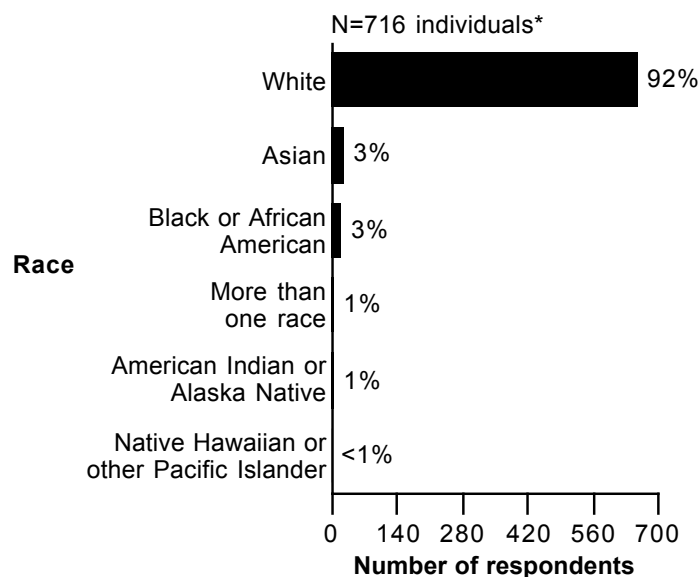


Figure 12. Visitor race

Language used for speaking and reading

Question 22a

When visiting an area such as White Sands National Monument what language(s) do most members of your personal group prefer to use for speaking?

Results

- 92% of visitor groups preferred English for speaking (see Figure 13).
- “Other” languages (7%) are listed in Table 9.

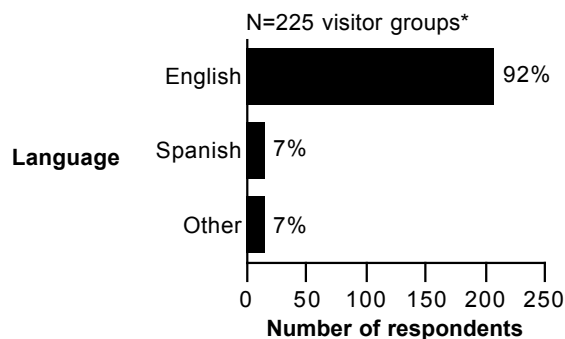


Figure 13. Language preferred for speaking

Question 22a

When visiting an area such as White Sands National Monument what language(s) do most members of your personal group prefer to use for reading?

Results

- 88% of visitor groups preferred English for reading (see Figure 14).
- “Other” languages (6%) are listed in Table 10.

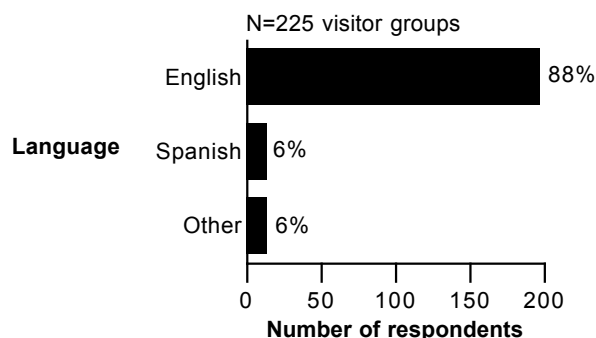


Figure 14. Language preferred for reading

Table 9. “Other” languages preferred for speaking (N=12 comments) – **CAUTION!**

Language	Number of times mentioned
German	6
Danish	1
Dutch	1
French	1
Gujarati	1
Korean	1
Polish	1

Table 10. “Other” languages preferred for reading (N=12 comments) – **CAUTION!**

Language	Number of times mentioned
German	7
Danish	1
Dutch	1
French	1
Gujarati	1
Polish	1

Question 22b

What services in the park need to be provided in languages other than English?

Results

- 10% of visitor groups felt there were services that need to be provided in languages other than English (see Figure 15).
- Services that need to be provided in languages other than English are listed in Table 11.

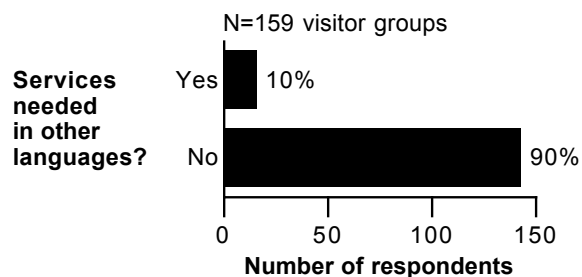


Figure 15. Visitor groups that felt services needed to be provided in languages other than English

Table 11. Services needed in other languages (N=17 comments) – **CAUTION!**

Service	Number of times mentioned
Guided tours	3
Brochures	2
Everything	2
Safety rules	2
Boardwalk trail	1
Destinations	1
Food	1
General information	1
Museum	1
Restrooms	1
Visitor center exhibits	1
Visitor center film	1

Respondent level of education

Question 21

For you only, what is the highest level of education you have completed?

Results

- 32% of respondents had a bachelor's degree (see Figure 16).
- 32% had some college.
- 29% had a graduate degree.

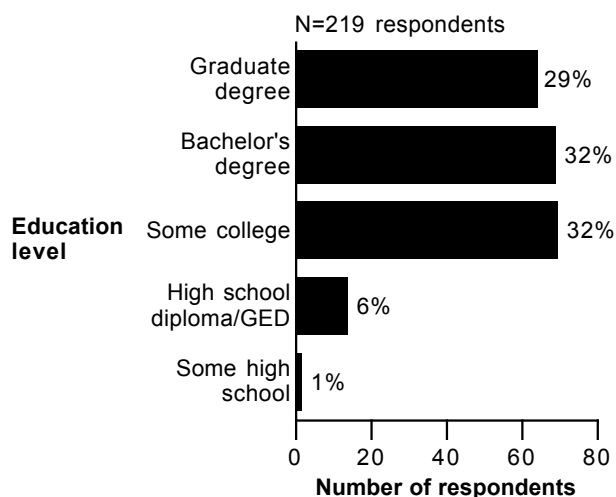


Figure 16. Respondent level of education

Respondent household income

Question 23a

For you only, which category best represents your annual household income?

Results

- 20% of respondents reported a household income of \$100,000-\$149,999 (see Figure 17).
- 17% had an income of \$50,000-\$74,999.
- 16% had an income of \$75,000-\$99,999.

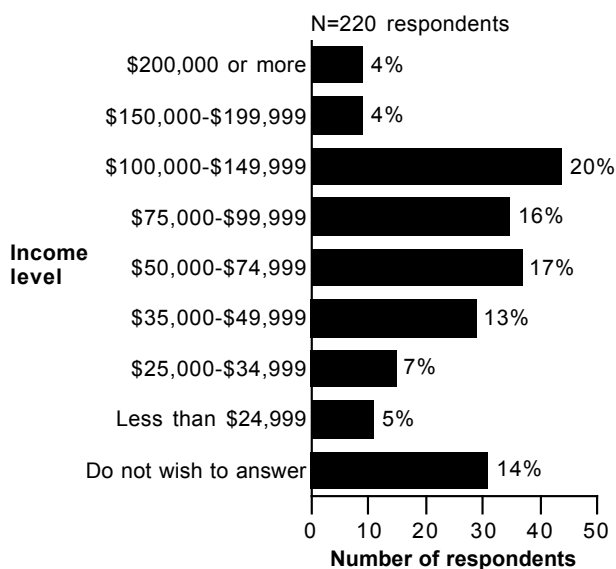


Figure 17. Respondent household income

Respondent household size

Question 23b

How many people are in your household?

Results

- 52% of respondents had one or two people in their household (see Figure 18).
- 35% had three or four people.

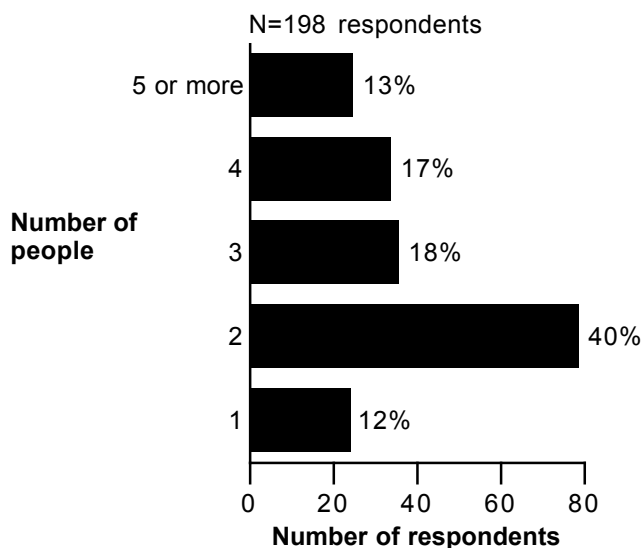


Figure 18. Number of people in respondent household

Awareness of park

Question 2

Prior to this visit, was your personal group aware that White Sands National Monument is part of the National Park System?

Results

- 78% of visitor groups were aware that White Sands National Monument is part of the National Park System (see Figure 19).

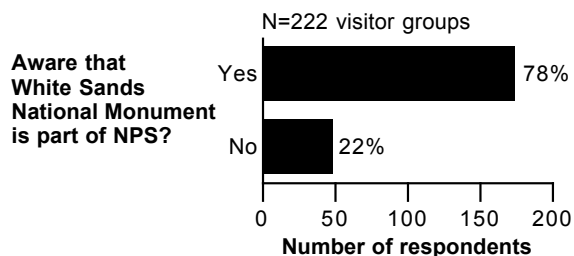


Figure 19. Visitor groups that were aware that White Sands National Monument is part of the National Park System

Trip/Visit Characteristics and Preferences

Information sources prior to visit

Question 1a

Prior to this visit, how did your personal group obtain information about White Sands National Monument?

Results

- 80% of visitor groups obtained information about White Sands National Monument prior to their visit (see Figure 20).
- As shown in Figure 21, among those visitor groups that obtained information about White Sands National Monument prior to their visit, the most common sources used were:

48% Friends/relatives/word of mouth
 44% Previous visits
 31% Park website
 (www.nps.gov/whsa)
 30% Maps/brochures

- “Other” sources (5%) were:

GPS
 Grew up here
 Live in El Paso
 Live in local area
 Lived in New Mexico for 40 years
 Road signs

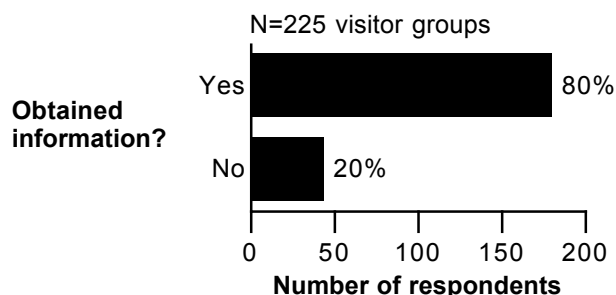


Figure 20. Visitor groups that obtained information prior to visit

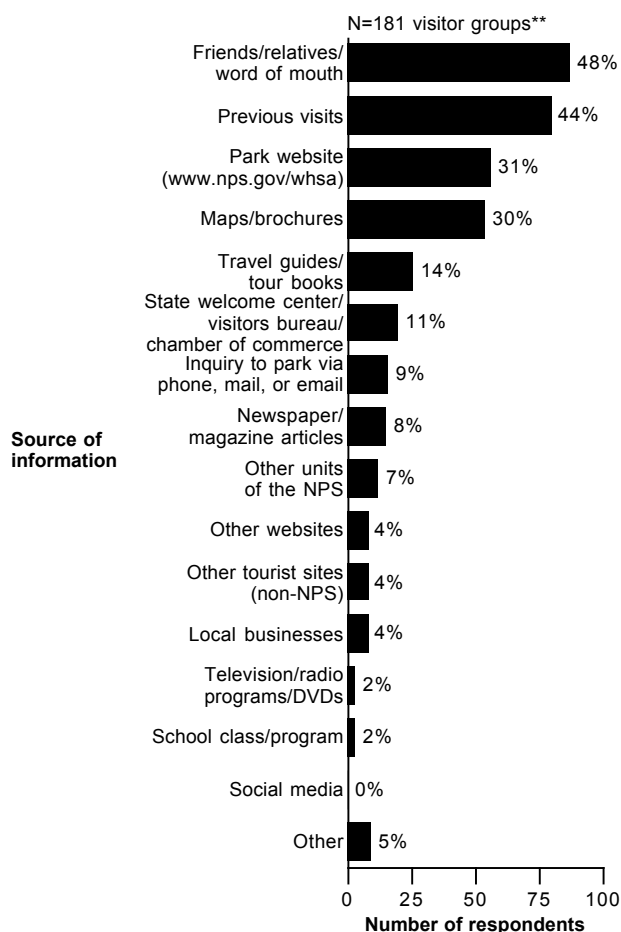


Figure 21. Sources of information used by visitor groups prior to visit

Question 1c

From the sources you used prior to this visit, did your personal group receive the type of information about the park that you needed?

Results

- 91% of visitor groups received the type of information they needed from sources used prior to this visit (see Figure 22).

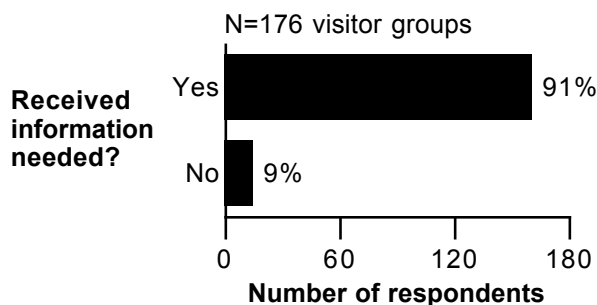


Figure 22. Visitor groups that received needed information prior to their visit

Question 1d

If NO, what type of park information did your personal group need that was not available? (Open-ended)

Results – Interpret results with CAUTION!

- 10 visitor groups listed information they needed that was not available (see Table 12).

Table 12. Type of park information needed but not available (N=12 comments; some visitor groups made more than one comment)

Information	Number of times mentioned
Availability of cookout facilities	1
Availability of RV overnight parking	1
Better organized website	1
Condition of restrooms inside the park	1
Cost for the day we visited	1
Cost of plastic snow saucers	1
Hours of operation webpage not working	1
Information at the visitor center	1
Map of what is available	1
More information on balloon fest	1
Regional brochure	1
Timing of tours (“sunset” too vague)	1

Information sources for future visit

Question 1b

If you were to visit White Sands National Monument in the future, how would your personal group prefer to obtain information about the park?

Results

- As shown in Figure 23, visitor groups' most preferred sources of information for a future visit were:

59% Park website
(www.nps.gov/whsa)
39% Previous visits
33% Maps/brochures
28% Friends/relatives/word of mouth

- No "other" sources of information were specified.

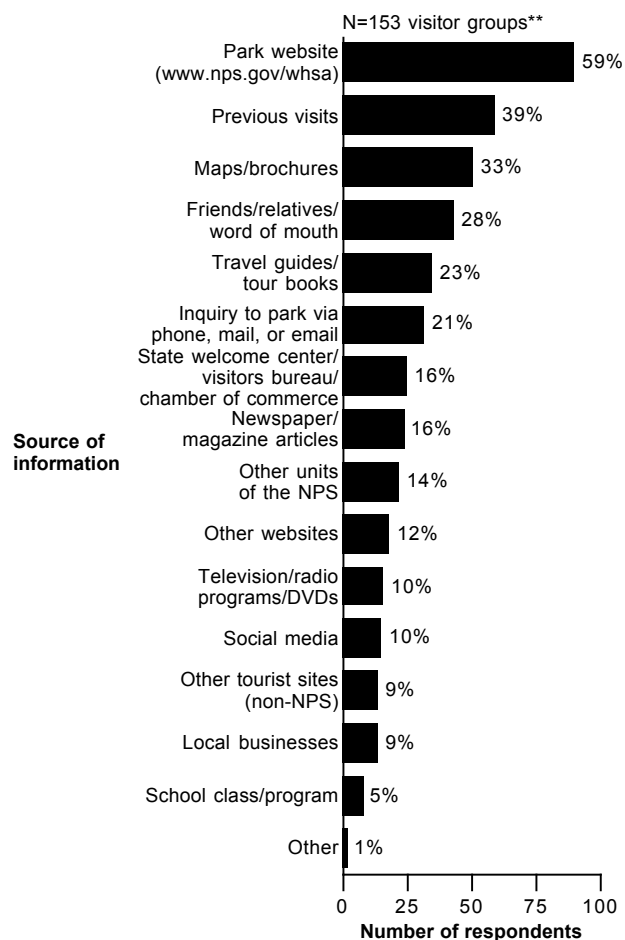


Figure 23. Sources of information to use for a future visit

Park website

Question 16a

Did your personal group obtain information from the park website (<http://www.nps.gov/whsa>) to plan your trip to White Sands National Monument?

Results

- 42% of visitor groups obtained information from the park website to plan their trip (see Figure 24).

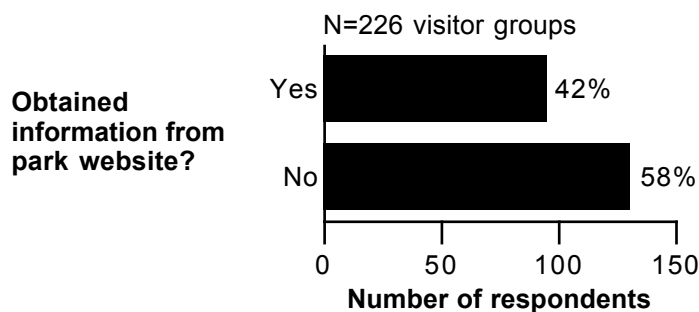


Figure 24. Visitor groups that obtained information from the park website to plan their trip

Question 16b

How would you rate the quality of information provided on the park website to plan your visit?

Results

- 80% of visitor groups rated the quality of information as “very good” or “good” (see Figure 25).
- 3% rated the quality of information as “poor.”
- No visitor groups rated the quality of information as “very poor.”

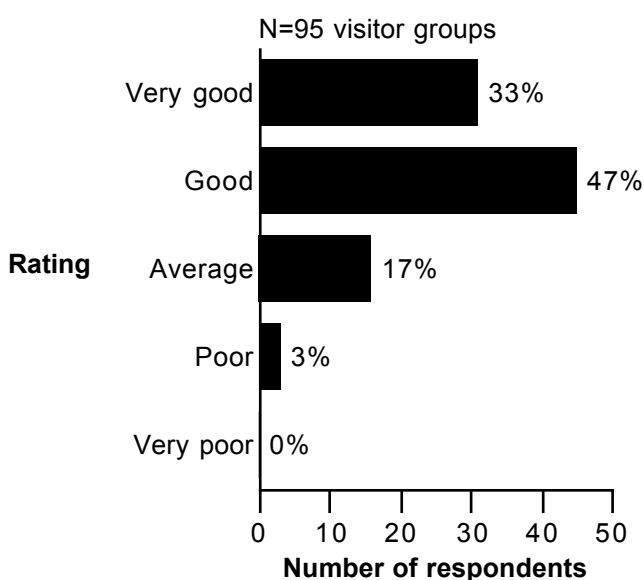


Figure 25. Quality of information provided on the park website

Question 16c

Did you find the information that your personal group needed on the park website?

Results

- 91% of visitor groups found the information they needed on the park website (see Figure 26).

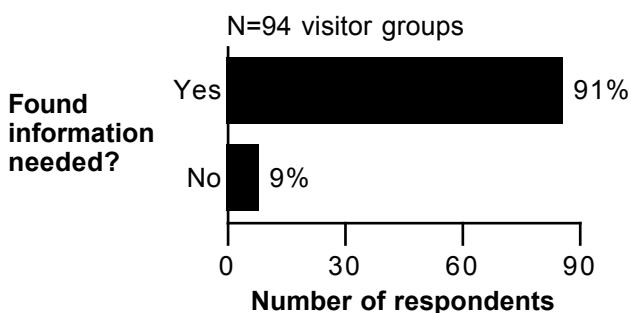


Figure 26. Visitor groups that found needed information on the park website

Question 16d

If NO, what type of information did your personal group need that was not available on the park website?
(Open-ended)

Results – Interpret results with **CAUTION!**

- 9 visitor groups listed types of information that were needed but not available on the park website (see Table 13).

Table 13. Type of information needed but not available on the park website – **CAUTION!**
(N=14 comments; some visitor groups made more than one comment)

Information	Number of times mentioned
Address	1
Closing information	1
Difficult to understand what a visit would be like	1
Events	1
Maps	1
Missile test closure information	1
Operating hours	1
Overall structure unclear	1
Prices	1
Road maps	1
Snow sled costs	1
Trail maps	1
Website difficult to understand	1
Word of mouth	1

Question 16e

What type of information on the park website was most valuable to your personal group? (Open-ended)

Results – Interpret results with **CAUTION!**

- 15 visitor groups listed types of information that were most valuable to their personal group (see Table 14).

Table 14. Most valuable type of information on park website – **CAUTION!**
(N=29 comments; some visitor groups made more than one comment)

Information	Number of times mentioned
Operating hours	10
Location	3
Trails	2
Details about the park	1
Directions	1
Everything	1
History and geology of area	1
Maps	1
Overview	1
Park hours	1
Pictures	1
Price	1
Safety rules	1
Schedule of activities	1
Size of the gypsum surface	1
Things to do	1
Things to know before your visit	1

Park as destination

Question from on-site interview

A two-minute interview was conducted with each individual selected to complete the questionnaire. During the interview, the question was asked: “How did this visit to White Sands National Monument fit into your personal group’s travel plans?”

Results

- 55% of visitor groups indicated that White Sands National Monument was one of several destinations (see Figure 27).
- 34% indicated the park was their primary destination.

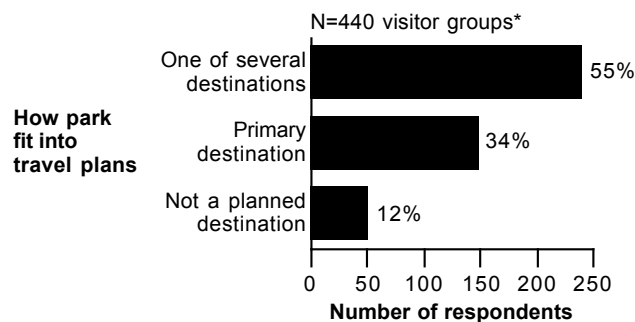


Figure 27. How visit to park fit into visitor groups' travel plans

Resident of the area

Question 3a

Was every member in your personal group a resident of the White Sands National Monument area (Alamogordo, Tularosa, Las Cruces)?

Results

- 11% of visitor groups were residents of the area (see Figure 28).

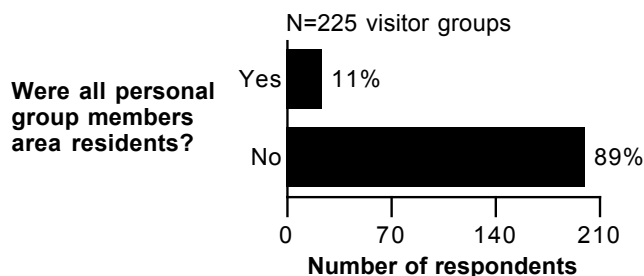


Figure 28. Residents of the White Sands National Monument area (Alamogordo, Tularosa, Las Cruces)

White Sands National Monument as primary reason for visiting the area

Question 3b

Was visiting White Sands National Monument the primary reason that the nonresident members in your personal group came to the area (Alamogordo, Tularosa, Las Cruces)?

Results

- 48% of visitor groups indicated that visiting White Sands National Monument was the primary reason for visiting the area among nonresident members (see Figure 29).

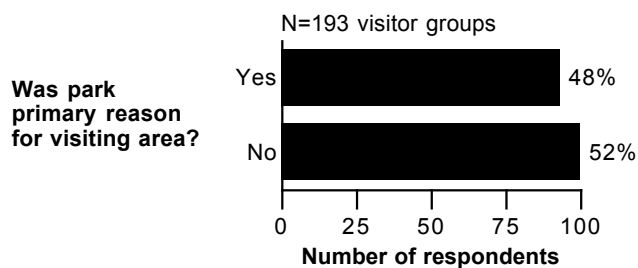


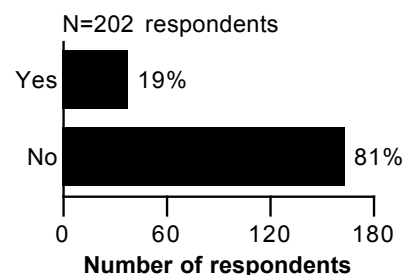
Figure 29. Visiting White Sands National Monument as primary reason for coming to the area among nonresident members

Alternative plans to visiting White Sands National Monument

Question 5a

For you only, if you had not chosen to visit White Sands National Monument on this trip, what other recreation site would you have visited instead?

Visited another recreation site?



Results

- 19% of respondents would have visited another recreation site if they had been unable to visit White Sands National Monument on this trip (see Figure 30).
- Table 15 shows the alternate recreation sites.

Figure 30. Respondents who would have visited another recreation site

Table 15. Alternate recreation sites
(N=47 comments)

Site	Number of times mentioned
Carlsbad Caverns National Park	7
New Mexico Museum of Space History, Alamogordo, NM	6
Aguirre Springs National Recreation Area	3
Cloudcroft, NM	3
Lincoln, NM	3
Ruidoso, NM	3
El Paso, TX	2
Guadalupe Mountains National Park	2
Bosque del Apache National Wildlife Refuge	1
City of Rocks State Park	1
Davis Mountains, TX	1
Grand Canyon National Park	1
Las Cruces, NM	1
Old Mesilla, NM	1
Pistachio Tree Farm	1
Roswell, NM	1
Ruins	1
Sacramento Mountains	1
Saguaro National Park	1
Solar Observatory, Sunspot, NM	1
State parks	1
Taos, NM	1
The Alamo, San Antonio, TX	1
The lake	1
Three Rivers Petroglyph Site	1
Zoo, Alamogordo, NM	1

Question 5b

How far is this alternative site from your home?

Results

- 73% of respondents listed distances that were 101 or more miles from their home (see Figure 31).

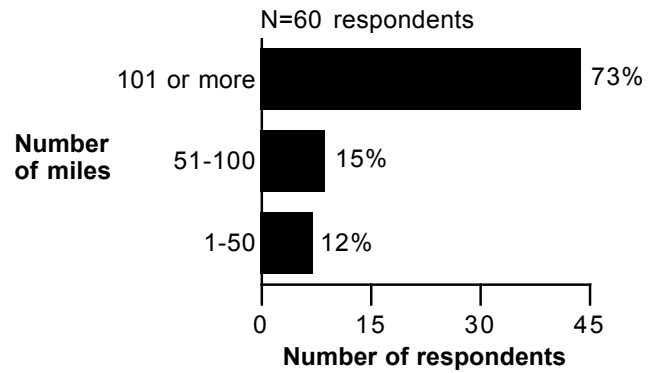


Figure 31. Distance of alternate site from home

Support services in communities

Question 18

In which communities did your personal group obtain support services (e.g. gas, food, lodging, information) for this visit to White Sands National Monument?

Results

- 91% of visitor groups obtained support services (see Figure 32).
- As shown in Figure 33, the most common communities where visitor groups obtained support services were:
 - 56% Alamogordo
 - 31% Las Cruces
 - 23% Ruidoso
- “Other” communities (10%) are shown in Table 16.

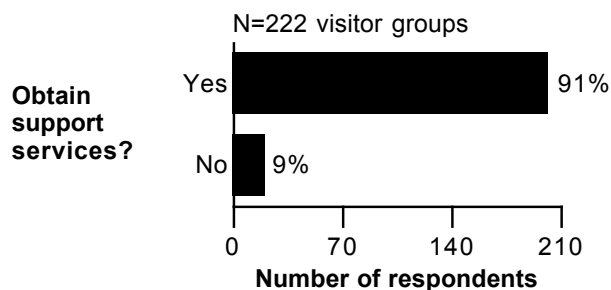


Figure 32. Visitor groups that obtained support services

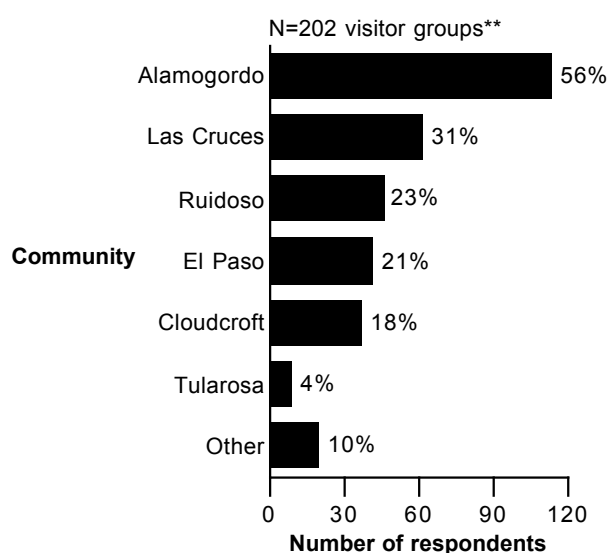


Figure 33. Communities where support services were obtained

Table 16. “Other” communities where support services were obtained – **CAUTION!** (N=24 comments; some visitor groups made more than one comment)

Community	Number of times mentioned
Carlsbad, NM	6
Roswell, NM	5
Albuquerque, NM	2
Artesia, NM	2
Holloman Air Force Base, NM	2
Socorro, NM	2
La Luz, NM	1
Phoenix, AZ	1
Santa Fe, NM	1
Silver City, NM	1
Truth or Consequences, NM	1

Form of transportation

Question 3c

For the nonresident members in your personal group, what was the method of transportation used to travel most of the distance from home to the White Sands National Monument area?

Results

- 58% of nonresident visitor group members used a car to travel most of the distance from home to the White Sands National Monument area (see Figure 34).
- 26% traveled by SUV/truck/van

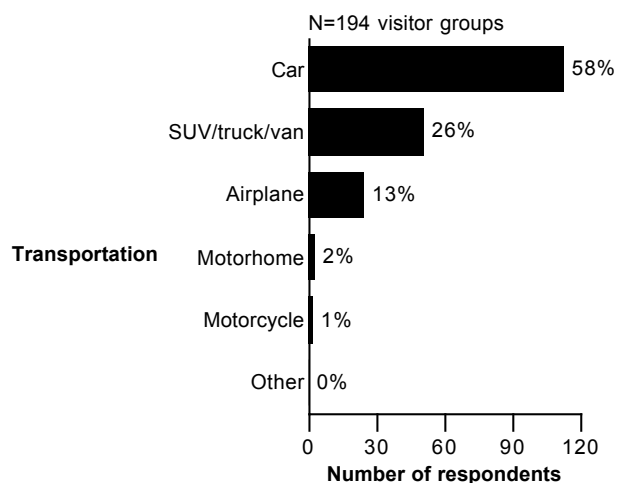


Figure 34. Form of transportation used to travel most of the distance from home to the White Sands National Monument area

Number of vehicles

Question 7e

On this visit, how many vehicles did your personal group use to arrive at the park?

Results

- 88% of visitor groups used one vehicle to arrive at the park (see Figure 35).
- 6% used two vehicles.

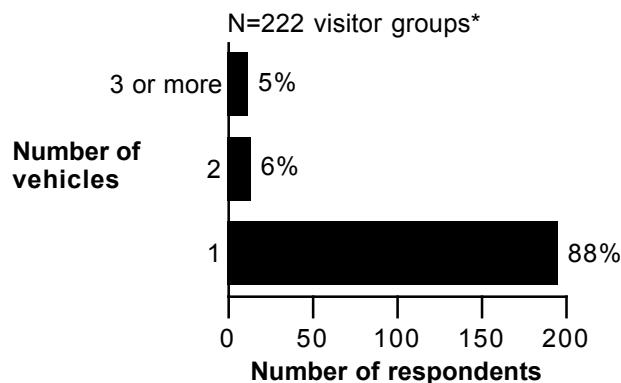


Figure 35. Number of vehicles used to arrive at the park

Number of park entries

Question 7d

On this trip, how many times did your personal group enter the park?

Results

- 87% of visitor groups entered the park one time (see Figure 36).
- 9% entered twice.

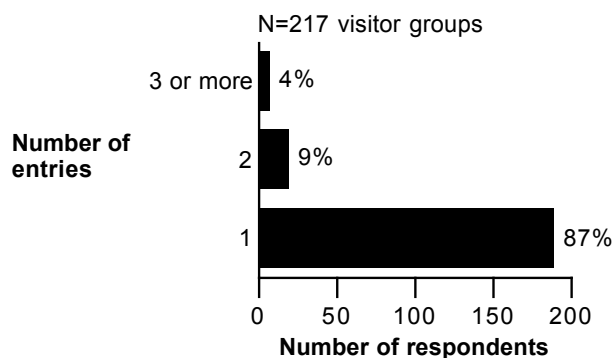


Figure 36. Number of park entries

Overnight stays

Question 6a

On this trip, did anyone in your personal group stay overnight, away from their permanent residence, in the White Sands National Monument area (Alamogordo, Tularosa, Las Cruces)?

Results

- 42% of visitor groups stayed overnight away from home in the White Sands National Monument area (see Figure 37).

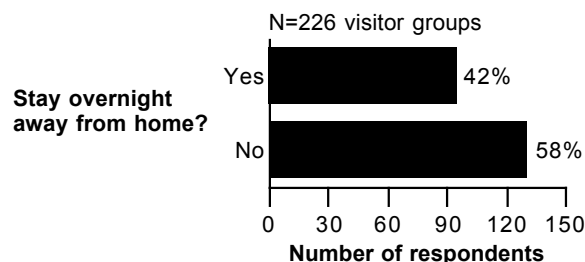


Figure 37. Visitor groups that stayed overnight in the White Sands National Monument area

Question 6b

If YES, how many nights were spent in White Sands National Monument?

Results – Interpret with **CAUTION!**

- Not enough visitor groups responded to this question to provide reliable results (see Figure 38).

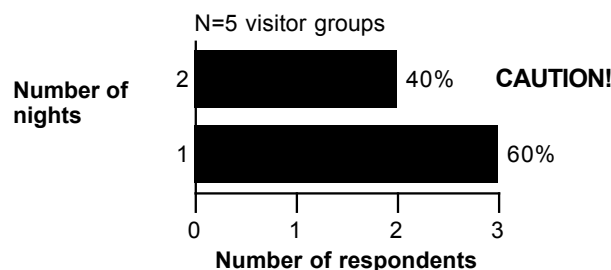


Figure 38. Number of nights spent in White Sands National Monument

Question 6b

If YES, how many nights were spent in the park area (Alamogordo, Tularosa, Las Cruces)?

Results

- 52% of visitor groups stayed one night in the park area (see Figure 39).
- 22% stayed four or more nights.
- 26% stayed two or three nights.

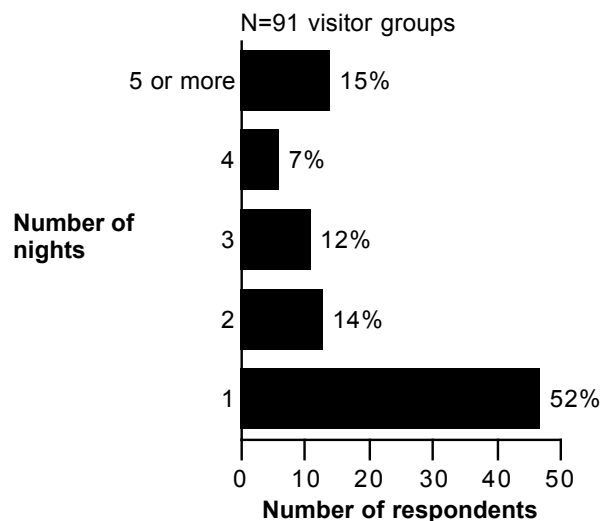


Figure 39. Number of nights spent in the park area

Accommodations used inside the park

Question 6c

Please list the number of nights your personal group spent in each type of accommodation inside the park.

Results – Interpret with **CAUTION!**

- Not enough visitor groups responded to this question to provide reliable results (see Figure 40).
- No “other” types of accommodations were specified.
- Table 17 shows the number of nights spent in accommodations inside the park.

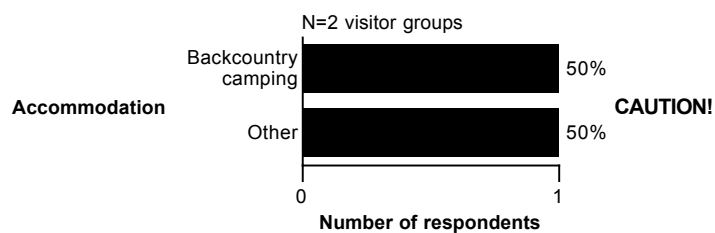


Figure 40. Accommodations used inside the park

Table 17. Number of nights spent in accommodations inside the park – **CAUTION!**
(N=number of visitor groups)

Accommodation	N	Number of nights (%)*			
		1	2	3	4 or more
Backcountry camping	1	0	100	0	0
Other	1	100	0	0	0

Accommodations used outside the park

Question 6d

Please list the number of nights your personal group spent in each type of accommodation in the local area (Alamogordo, Tularosa, Las Cruces).

Results

- As shown in Figure 41, among those visitor groups that stayed overnight in the area outside the park, the most common types of accommodations were:

69% Lodge, motel, rented condo/home cabin, B&B, etc.
 20% Residence of friends or relatives
 10% RV camping in developed campground

- Table 18 shows the number of nights spent in accommodations outside the park.

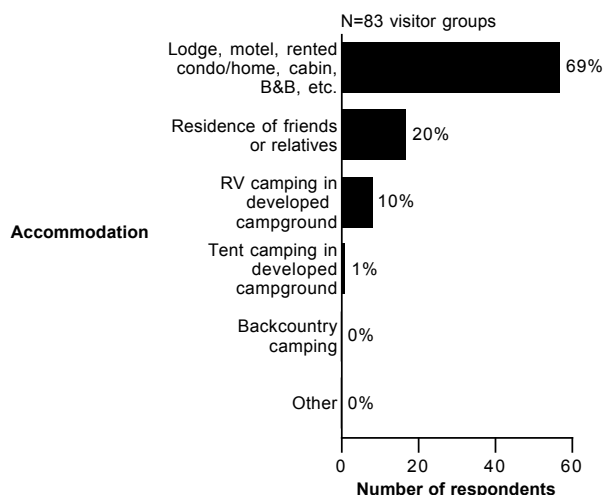


Figure 41. Accommodations used outside the park in the local area

Table 18. Number of nights spent in accommodations outside the park in the local area (Alamogordo, Tularosa, Las Cruces)
 (N=number of visitor groups)

Accommodation	N	Number of nights (%)*			
		1	2	3	4 or more
Lodge, motel, rented condo/home, cabin, B&B, etc.	57	61	18	9	12
Residence of friends or relatives – CAUTION!	17	6	12	24	59
RV camping in developed campground – CAUTION!	8	63	13	13	13
Backcountry camping – CAUTION!	0	0	0	0	0
Tent camping in developed campground – CAUTION!	1	100	0	0	0
Other – CAUTION!	0	0	0	0	0

Length of stay in the park

Question 7a

On this visit, how many hours in total did your personal group spend visiting White Sands National Monument?

Results

- 51% of visitor groups spent one or two hours (see Figure 42).
- 34% spent three or four hours.

Average length of stay

- The average length of stay was 3.3 hours.

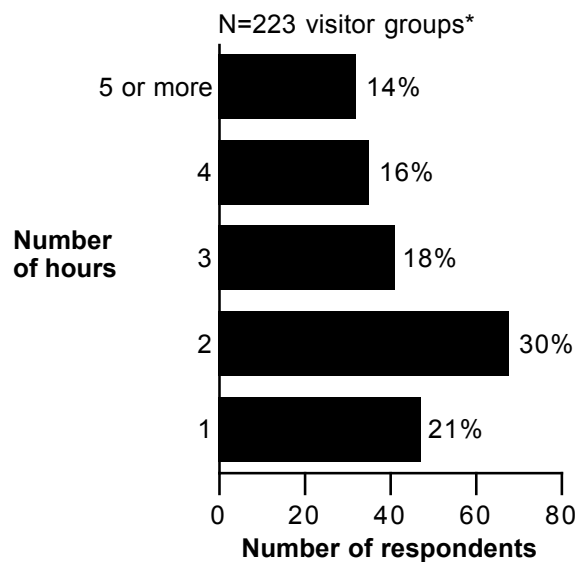


Figure 42. Total number of hours spent at White Sands National Monument

Question 7b

On this visit, did your personal group visit the park on more than one day?

Results

- 12% of visitor groups visited the park on more than one day (see Figure 43).

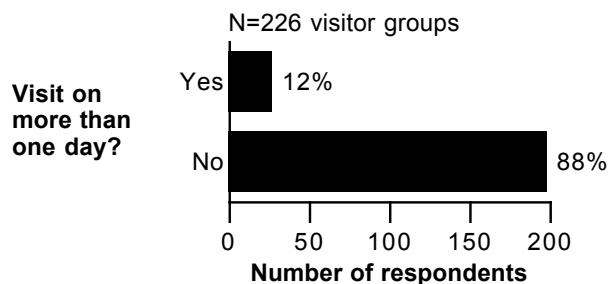


Figure 43. Visitor groups that visited White Sands National Monument on more than one day

Question 7c

If YES, on how many days did you visit the park?

Results – Interpret with CAUTION!

- Not enough visitor groups responded to this question to provide reliable results (see Figure 44).

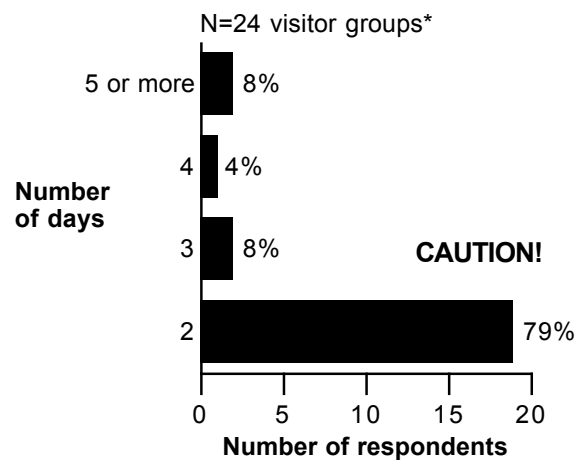


Figure 44. Total number of days spent at White Sands National Monument

Local attractions visited

Question 4

Which other attractions in the local area did your personal group visit?

Results

- 68% of visitor groups visited other local attractions on this visit (see Figure 45).
- As shown in Figure 46, the local attractions most commonly visited were:
 - 54% Cloudcroft, Sacramento Mts.
 - 41% Ruidoso, Sacramento Mts.
 - 41% Lincoln National Forest
- “Other” local attractions (23%) are shown in Table 19.

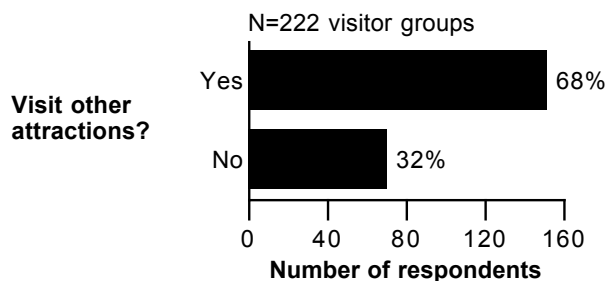


Figure 45. Visitor groups that visited other local attractions

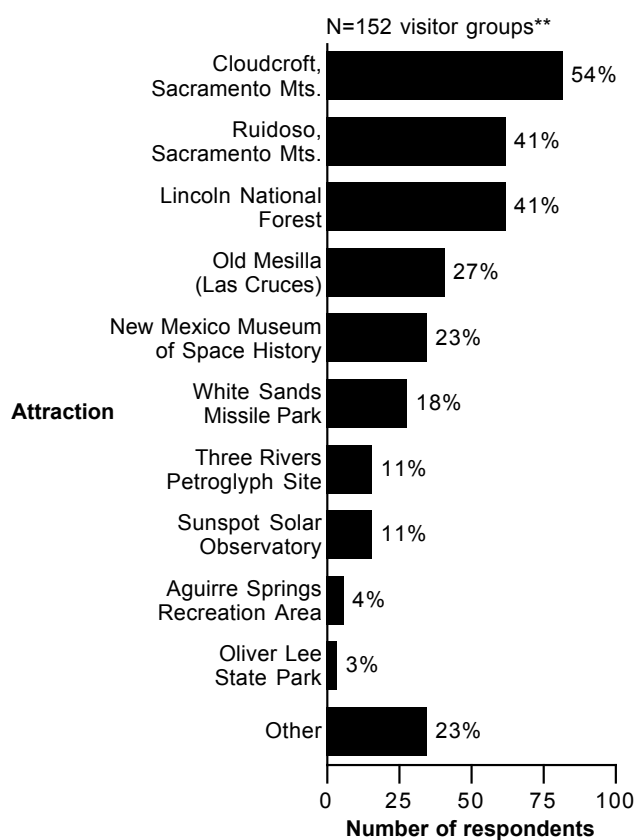


Figure 46. Local attractions visited

Table 19. “Other” local attractions
(N=48 comments; some visitor groups made more than one comment)

Attraction	Number of times mentioned
Carlsbad Caverns National Park	10
Dripping Springs Natural Area, Las Cruces, NM	3
Pistachio Tree Ranch	2
Roswell, NM	2
Saguaro National Park	2
Alameda Zoo, Alamogordo, NM	1
Arches National Park	1
Belen, NM	1
Bryce Canyon National Park	1
Captain Mountains	1
City of Rocks State Park, Deming, NM	1
Death Valley National Park	1
Farm and Ranch Heritage Museum, Las Cruces, NM	1
Fort Stanton, NM	1
Gila National Park	1
Gree Ranch	1
Guadalupe Mountains National Park	1
Holloman Air Force Base, NM	1
Hueco Tanks State Park, TX	1
Ice Caves, Grants, NM	1
Inn of the Mountain Gods, Mescalero, NM	1
Lincoln, NM	1
Mesa Verde National Park	1
Monument Valley	1
Painted Desert, AZ	1
Petrified Forest National Park	1
Petroglyph National Monument	1
Pistachio farm	1
Solomo VLA	1
Spaceport America, Las Cruces, NM	1
Valley of Fires Recreation Area, Carrizozo, NM	1
Viva El Paso, El Paso, TX	1
Yosemite National Park	1
Zion National Park	1

Places visited in the park

Question 8

For this trip, which of the following places in White Sands National Monument did your personal group visit?

- As shown in Figure 47, the most commonly visited places by visitor groups at White Sands National Monument were:

73% Visitor center/bookstore
73% The Dunes Drive
59% Gift store

- The least visited place was:

4% Backcountry campsite

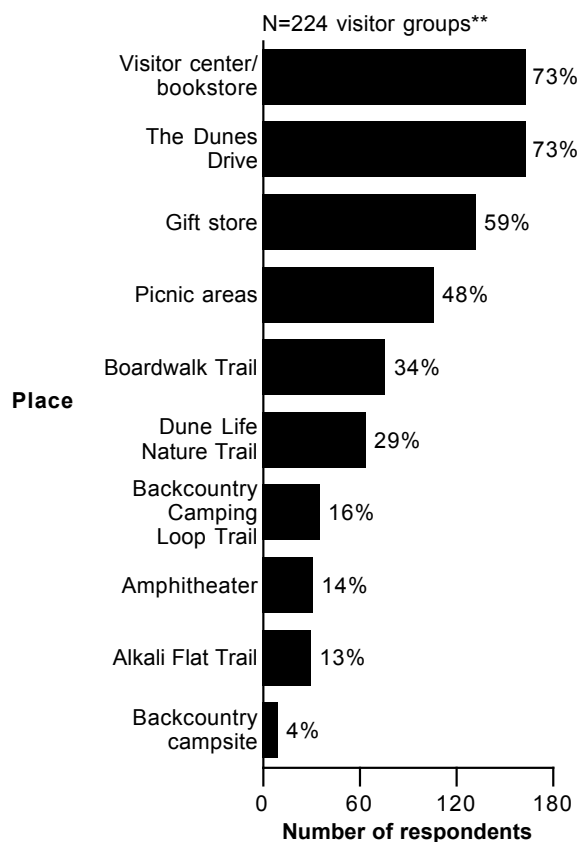


Figure 47. Places visited

Activities on this visit

Question 9a

On this visit, in which activities did your personal group participate within White Sands National Monument?

Results

- As shown in Figure 48, the most common activities in which visitor groups participated on this visit were:

77% General sightseeing
52% Stopping at scenic overlooks/pullouts
47% Shopping in park gift store

- “Other” activities (3%) were:

Handing out Gospel tracks with my camel Matilda
Playing on the dunes
Sledding our dogs
Visiting children’s book author
Watching sunset

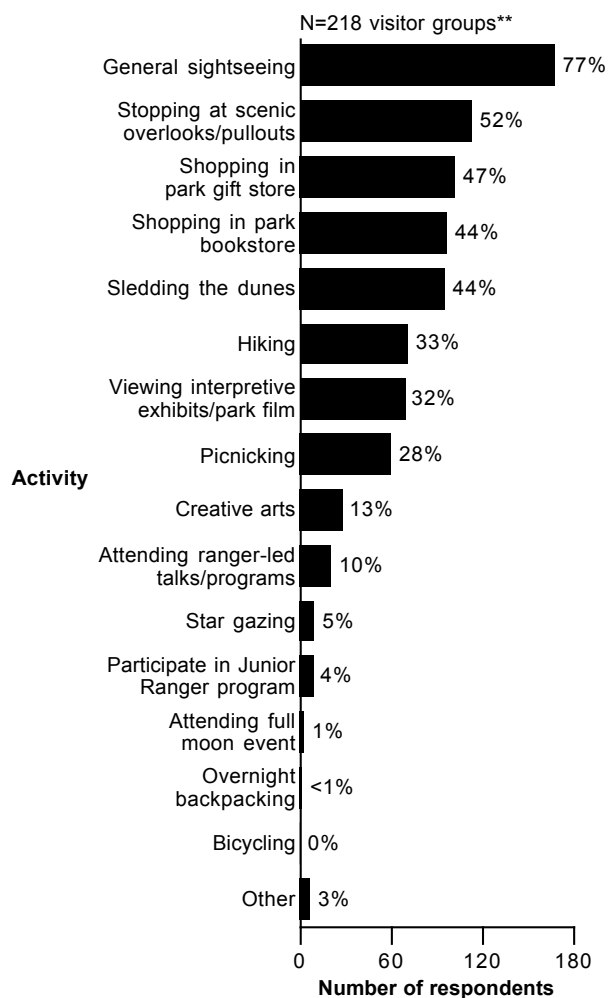


Figure 48. Activities on this visit

Most important activities

Question 9c

Which one of the above activities was the most important to your personal group on this visit?

Results

- As shown in Figure 49, the activities listed as “most important” to visitor groups included:

39% General sightseeing
30% Sledding the dunes
8% Hiking

- “Other” activities (3%) were:

Handing out Gospel tracks
Playing on the dunes
Sunset stroll

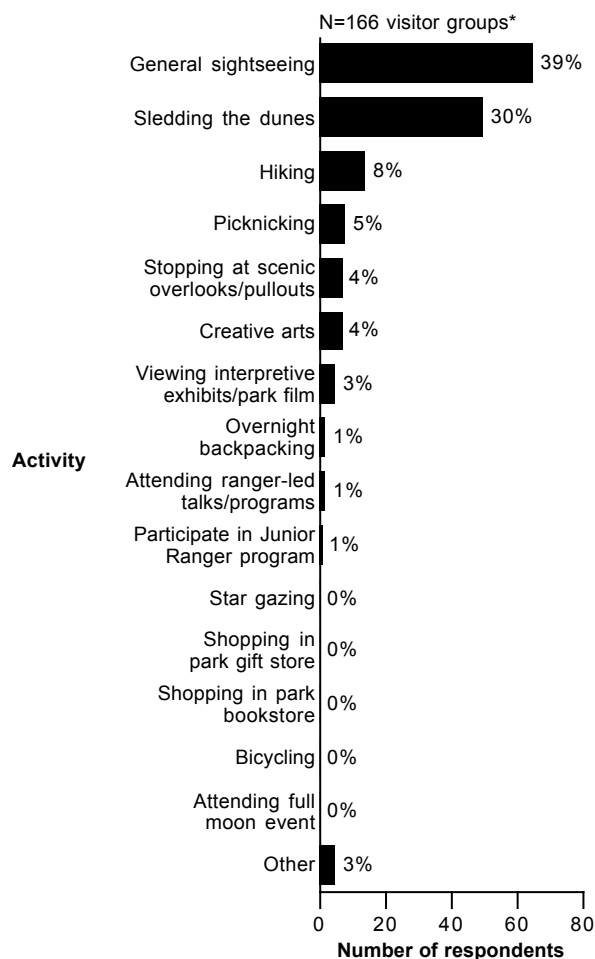


Figure 49. Most important activities

Activities on future visits

Question 9b

If you were to visit the park in the future, in which activities would your personal group prefer to participate within the park?

Results

- As shown in Figure 50, the most common activities in which visitor groups would prefer to participate on future visits were:

64% General sightseeing
63% Sledding the dunes
60% Attending full moon event

- “Other” activities (3%) were:

Cookout
Exercise dog
Geocaching
Hand out Gospel tracks with my camel Matilda
Sunset stroll

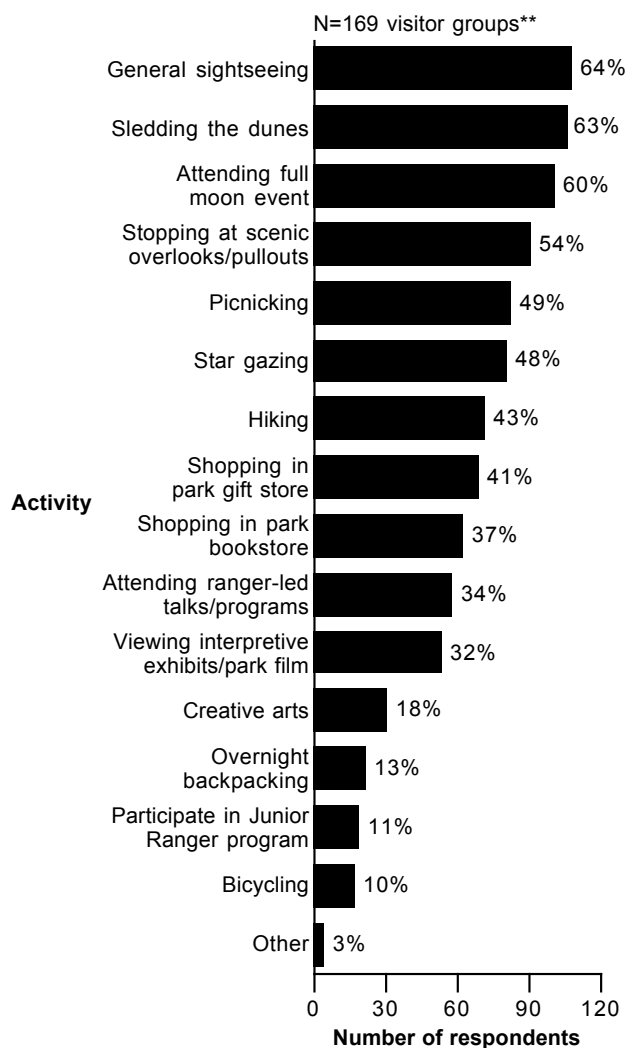


Figure 50. Activities on future visits

Ranger-led programs/talks

Question 13a

On this visit, did your personal group attend any ranger-led activities/programs at White Sands National Monument?

Results

- 12% of visitor groups attended ranger-led activities/programs (see Figure 51).

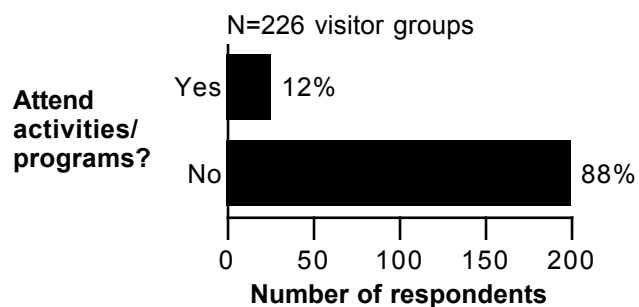


Figure 51. Visitor groups that attended ranger-led activities/programs

Question 13b

If NO, why not?

Results

- 71% of visitor groups did not attend ranger-led activities/programs because of lack of time (see Figure 52).
- 18% did not attend because the talk/program times were not convenient.
- “Other” reasons (10%) are listed in Table 20.

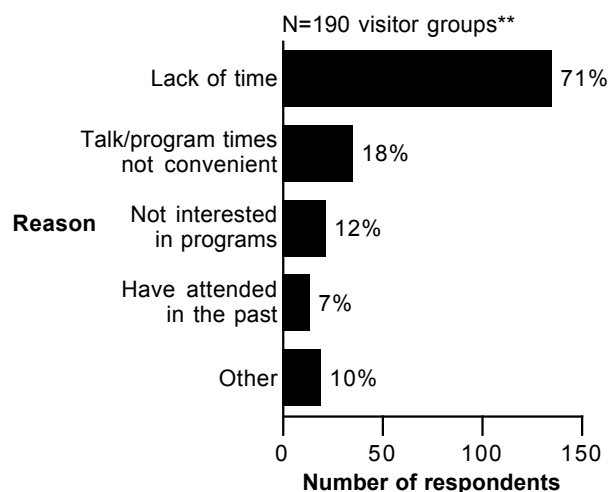


Figure 52. Reasons for not attending ranger-led activities/programs

Table 20. “Other” reasons for not attending ranger-led activities/programs – **CAUTION!**
(N=19 comments)

Reason	Number of times mentioned
Too hot	4
Children too young	3
Unaware of programs	2
Appointment to keep in Arizona	1
Had planned family activity	1
Language	1
Not available	1
Not easy to plan in advance	1
Teenagers	1
Unable to locate	1
Visited just to play	1
Wanted family time	1
Wanted to view the sands	1

Ratings of Services, Facilities, Attributes, Resources, and Elements

Visitor services and facilities used

Question 10a

Please indicate all the visitor services and facilities that your personal group used at White Sands National Monument during this visit.

Results

- As shown in Figure 53, the most common visitor services and facilities used by visitor groups were:
 - 79% Restrooms
 - 69% Park brochure/map
 - 53% Gift shop (selection, price, etc.)
- The least used service/facility was:
 - 4% Backcountry campsites

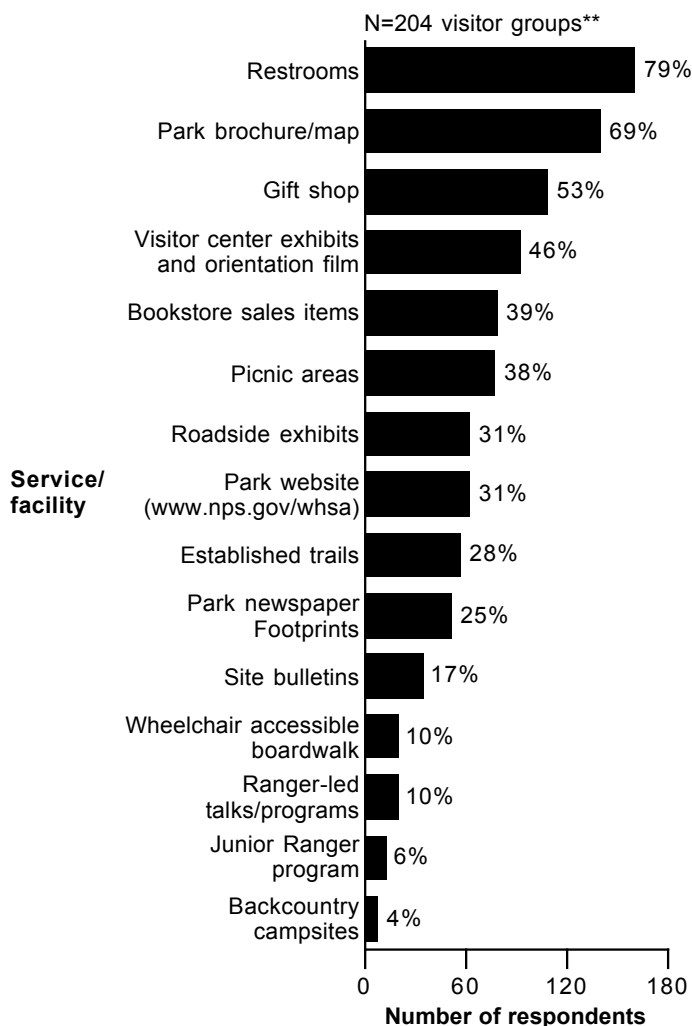


Figure 53. Visitor services and facilities used

Importance ratings of visitor services and facilities

Question 10b

For only those services and facilities that your personal group used, please rate their importance to your visit from 1-5.

- 1=Not at all important
- 2=Slightly important
- 3=Moderately important
- 4=Very important
- 5=Extremely important

Results

- Figure 54 shows the combined proportions of “extremely important” and “very important” ratings of visitor services and facilities that were rated by 30 or more visitor groups.
- The visitor services and facilities receiving the highest combined proportions of “extremely important” and “very important” ratings were:

- 94% Restrooms
- 88% Established trails
- 85% Park website
(www.nps.gov/whsa)
- 81% Park brochure/map

- Table 21 shows the importance ratings of each service and facility.
- The services/facilities receiving the highest “not at all important” rating that were rated by 30 or more visitor groups was:

- 7% Bookstore sales items
(selection, price, etc.)

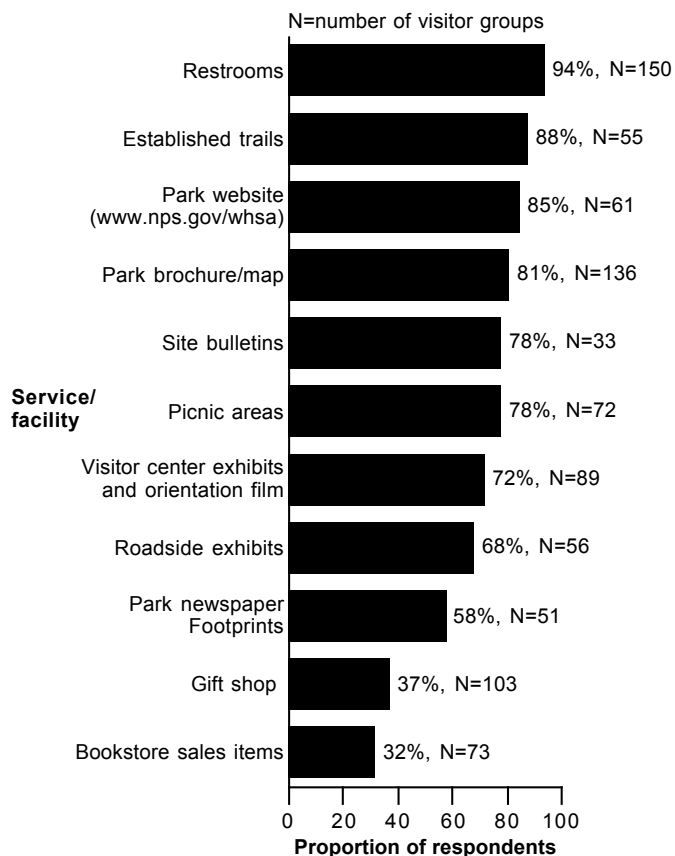


Figure 54. Combined proportions of “extremely important” and “very important” ratings of visitor services and facilities

Table 21. Importance ratings of visitor services and facilities
(N=number of visitor groups)

Service/facility	N	Rating (%)*				
		Not at all important	Slightly important	Moderately important	Very important	Extremely important
Backcountry campsites – CAUTION!	8	25	0	0	50	25
Bookstore sales items (selection, price, etc.)	73	7	29	33	22	10
Established trails	55	0	7	5	44	44
Gift shop (selection, price, etc.)	103	3	17	44	24	13
Junior Ranger program – CAUTION!	11	0	18	9	55	18
Park brochure/map	136	1	4	14	38	43
Park newspaper <i>Footprints</i>	51	4	14	24	27	31
Park website (www.nps.gov/whsa)	61	2	2	11	31	54
Picnic areas	72	0	8	14	35	43
Ranger-led talks/programs – CAUTION!	19	0	0	26	32	42
Restrooms	150	0	2	4	28	66
Roadside exhibits	56	0	7	25	36	32
Site bulletins	33	0	3	18	36	42
Visitor center exhibits and orientation film	89	0	4	24	36	36
Wheelchair accessible boardwalk – CAUTION!	20	10	10	15	20	45

Quality ratings of visitor services and facilities

Question 10c

For only those services and facilities that your personal group used, please rate their quality from 1-5.

1=Very poor

2=Poor

3=Average

4=Good

5=Very good

Results

- Figure 55 shows the combined proportions of “very good” and “good” ratings of visitor services and facilities that were rated by 30 or more visitor groups.
- The services and facilities receiving the highest combined proportions of “very good” and “good” ratings were:

98% Established trails
93% Park brochure/map
90% Visitor center exhibits and orientation film
82% Park newspaper *Footprints*

- Table 22 shows the quality ratings of each service and facility.
- The service/facility receiving the highest “very poor” rating that was rated by 30 or more visitor groups was:

3% Restrooms

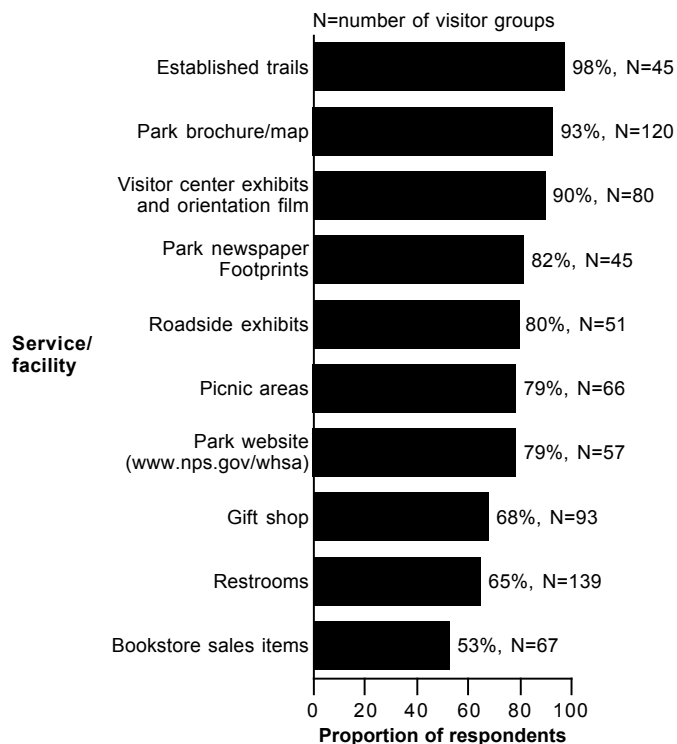


Figure 55. Combined proportions of “very good” and “good” ratings of visitor services and facilities

Table 22. Quality ratings of visitor services and facilities
(N=number of visitor groups)

Service/facility	N	Rating (%)*				
		Very poor	Poor	Average	Good	Very good
Backcountry campsites– CAUTION!	5	0	0	20	20	60
Bookstore sales items (selection, price, etc.)	67	0	1	45	31	22
Established trails	45	0	0	2	36	62
Gift shop (selection, price, etc.)	93	0	3	29	43	25
Junior Ranger program – CAUTION!	8	0	13	13	50	25
Park brochure/map	120	0	3	5	37	56
Park newspaper <i>Footprints</i>	45	0	2	16	40	42
Park website (www.nps.gov/whsa)	57	0	0	21	37	42
Picnic areas	66	0	2	20	32	47
Ranger-led talks/ programs – CAUTION!	16	6	6	0	19	69
Restrooms	139	3	9	23	42	23
Roadside exhibits	51	0	4	16	39	41
Site bulletins – CAUTION!	29	0	0	7	41	52
Visitor center exhibits and orientation film	80	0	1	9	39	51
Wheelchair accessible boardwalk – CAUTION!	15	0	0	0	33	67

Mean scores of importance and quality ratings of visitor services and facilities

- Figure 56 and Figure 57 show the mean scores of importance and quality ratings of visitor services and facilities that were rated by 30 or more visitor groups.
- All visitor services and facilities were rated above average.

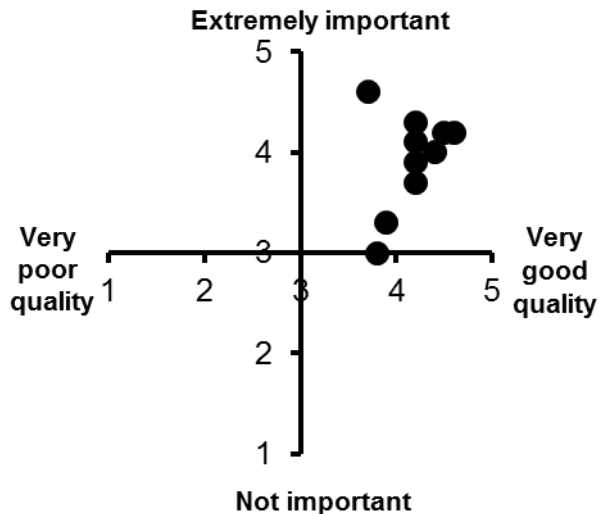


Figure 56. Mean scores of importance and quality of visitor services and facilities

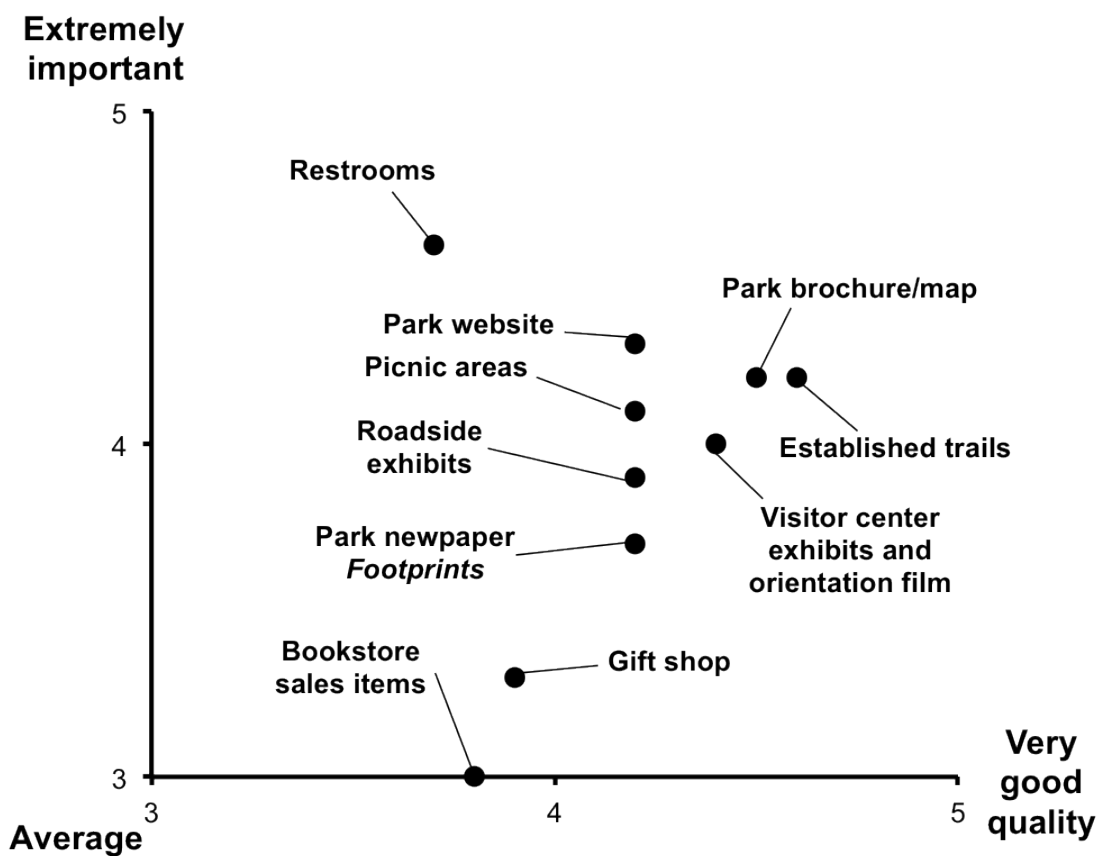


Figure 57. Detail of Figure 56

Park gift store sales items

Question 11a

The park gift store currently sells a number of items including “grab and go” food. On this visit, did your personal group buy any food items?

Results

- 15% of visitor groups bought food items from the park gift store (see Figure 58).

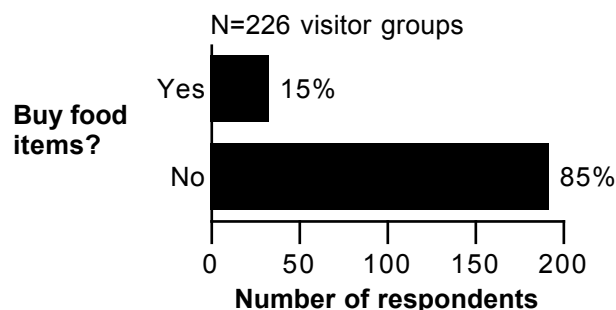


Figure 58. Visitor groups that bought food items from the park gift store

Question 11b

Please rate the quality of any food items that your personal group bought in the park gift store.

Results

- 67% of visitor groups rated the quality of food items as “very good” or “good” (see Figure 59).

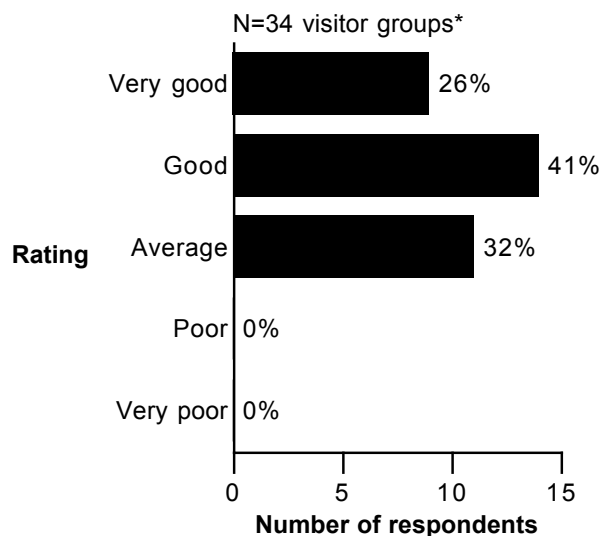


Figure 59. Quality ratings of food items

Question 11c

If your personal group were to visit White Sands National Monument in the future, would you prefer to have more picnic items available such as fresh sandwiches, chips, sodas, etc.?

Results

- 38% of visitor groups would prefer to have more picnic items available (see Figure 60).

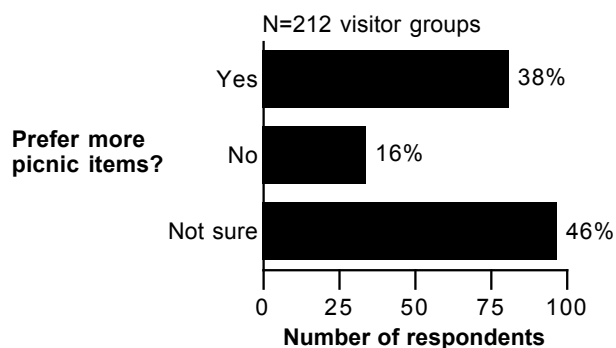


Figure 60. Visitor groups that would prefer to have more picnic items available

Importance of protecting park resources and attributes

Question 12

It is the National Park Service's responsibility to protect White Sands National Monument's natural, scenic, and cultural resources while at the same time providing for public enjoyment. How important is protection of the following park resources/attributes to your personal group?

- 1=Not at all important
2=Slightly important
3=Moderately important
4=Very important
5=Extremely important

Results

- As shown in Figure 61, the highest combined proportions of "extremely important" and "very important" ratings of protecting park resources and attributes were:

97% Clean water
96% Clean air
95% Scenic views

- Table 23 shows the importance ratings of each resource/attribute.
- The resources/attributes receiving the highest "not at all important" rating were:

2% Dark, starry night sky/stargazing
2% Native American culture/history

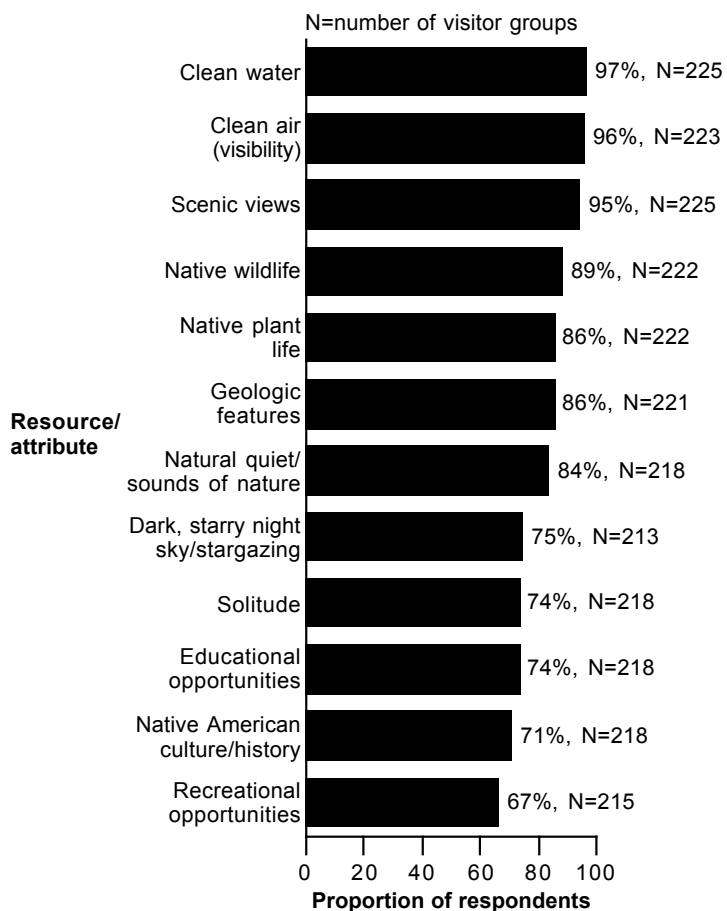


Figure 61. Combined proportions of "extremely important" and "very important" ratings of protecting park resources and attributes

Table 23. Importance ratings of protecting park resources and attributes
(N=number of visitor groups)

Resource/attribute	N	Rating (%)*				
		Not important	Somewhat important	Moderately important	Very important	Extremely important
Clean air (visibility)	223	0	1	3	35	61
Clean water	225	<1	<1	2	30	67
Dark, starry night sky/stargazing	213	2	4	19	34	41
Educational opportunities	218	1	5	20	43	31
Geologic features	221	0	1	13	41	45
Native plant life	222	0	3	12	36	50
Native wildlife	222	0	2	9	35	54
Native American culture/history	218	2	9	18	31	40
Natural quiet/sounds of nature	218	0	3	12	34	50
Recreational opportunities	215	1	8	24	38	29
Scenic views	225	0	0	4	37	58
Solitude	218	1	4	21	35	39

Expenditures

Total expenditures inside and outside the park

Question 17

For your personal group, please estimate expenditures for the items listed below for this visit to White Sands National Monument and the surrounding area (Alamogordo, Tularosa, Las Cruces).

Results

- 31% of visitor groups spent \$1-\$100 (see Figure 62).
- 19% spent \$101-\$200.
- 18% spent no money.
- The average visitor group expenditure was \$291.
- The median group expenditure (50% of groups spent more and 50% of groups spent less) was \$108.
- The average total expenditure per person (per capita) was \$88.
- As shown in Figure 63, the largest proportions of total expenditures inside and outside the park were:

32% Lodge, hotel, motel, cabin, B&B, etc.
19% Restaurants and bars
16% All other expenditures

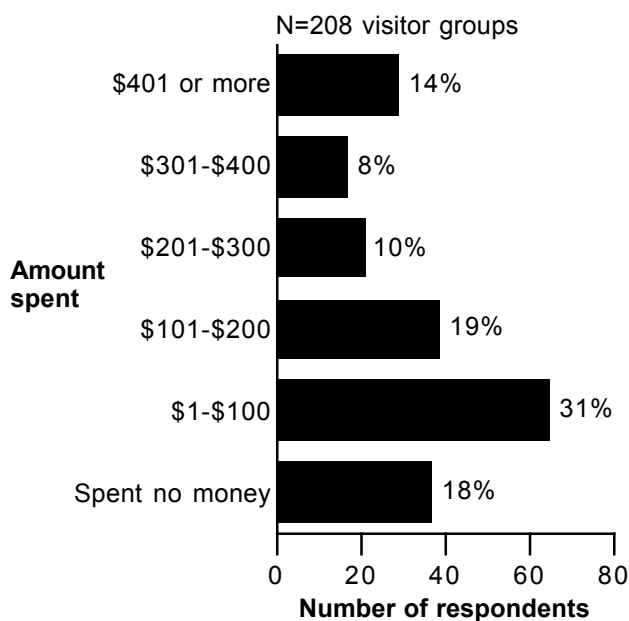


Figure 62. Total expenditures inside and outside the park

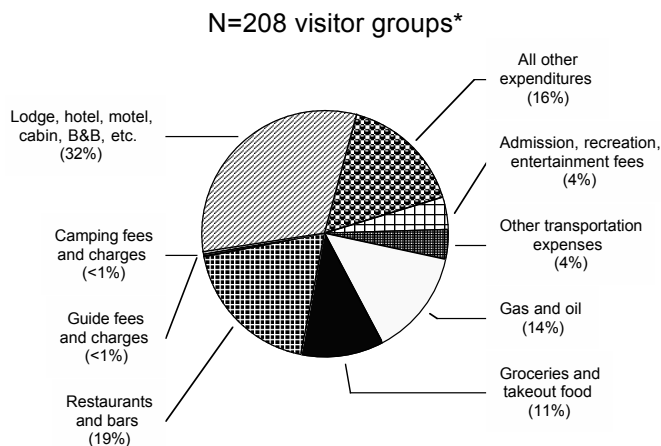


Figure 63. Proportions of total expenditures inside and outside the park

Number of adults covered by expenditures

Question 17c

How many adults (18 years or older) do these expenses cover?

Results

- 51% of visitor groups had two adults covered by expenditures (see Figure 64).
- 26% had three or four covered by expenditures.

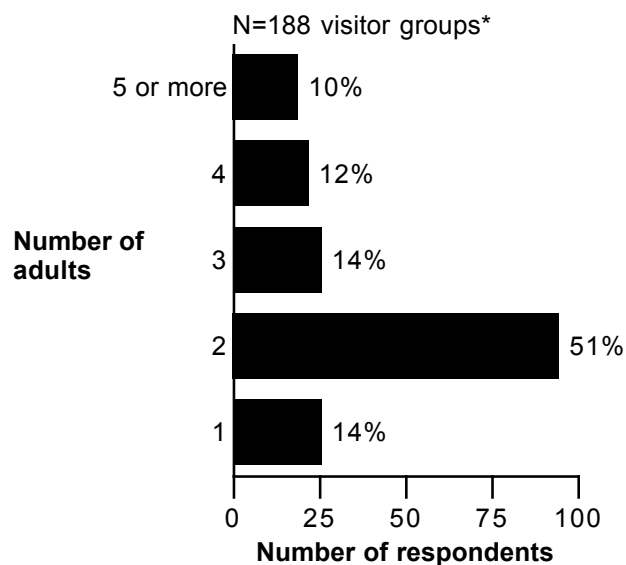


Figure 64. Number of adults covered by expenditures

Number of children covered by expenditures

Question 17c

How many children (under 18 years) do these expenses cover?

Results

- 47% of visitor groups had no children covered by expenditures (see Figure 65).
- 32% had one or two children covered by expenditures.
- 21% had three or more children covered by expenditures.

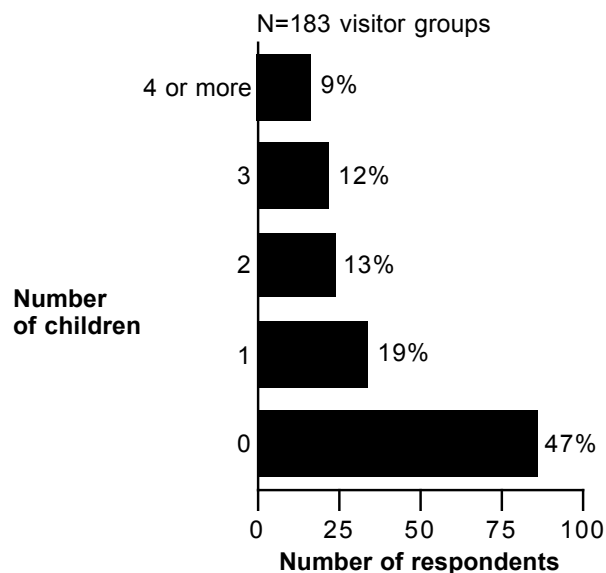


Figure 65. Number of children covered by expenditures

Expenditures inside the park

Question 17a

Please list your personal group's total expenditures inside the park.

Results

- 52% of visitor groups spent \$1-\$50 (see Figure 66).
- 34% spent no money.
- The average visitor group expenditure inside the park was \$27.
- The median group expenditure (50% of groups spent more and 50% of groups spent less) was \$10.
- The average total expenditure per person (per capita) was \$12.
- As shown in Figure 67, the largest proportion of total expenditures inside the park was:

68% All other expenditures

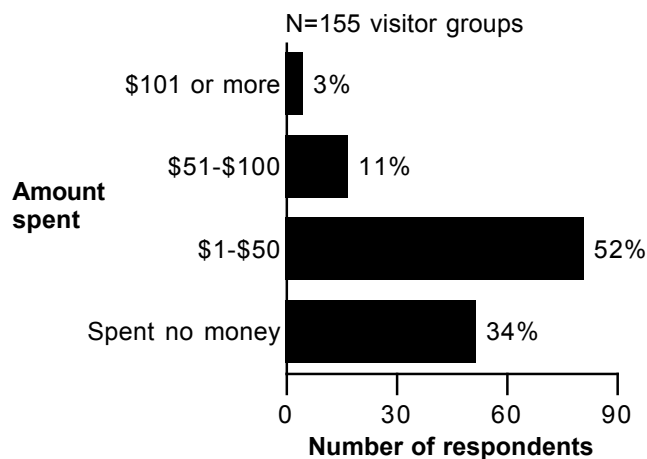


Figure 66. Total expenditures inside the park

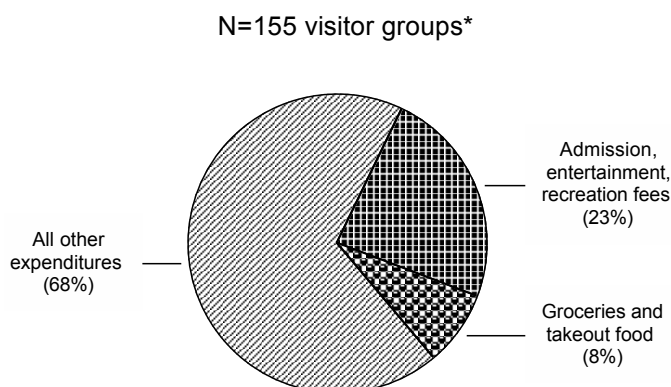


Figure 67. Proportions of total expenditures inside the park

Groceries and takeout food

- 77% of visitor groups spent no money on groceries and takeout food inside the park (see Figure 68).
- 13% spent \$1-\$10.

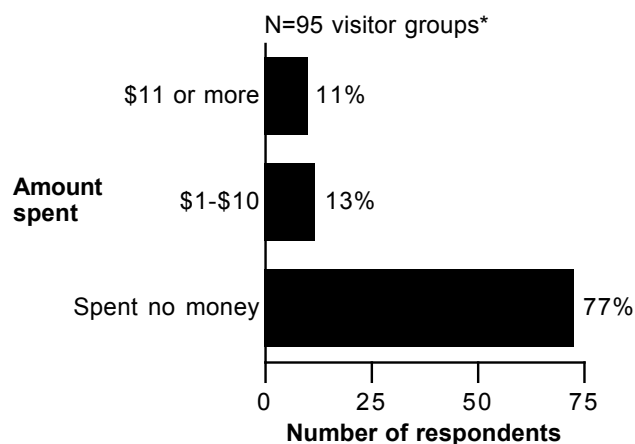


Figure 68. Expenditures for groceries and takeout food inside the park

Admission, recreation, entertainment fees

- 48% of visitor groups spent no money on admission, recreation, and entertainment fees inside the park (see Figure 69).
- 33% spent \$1-\$10.

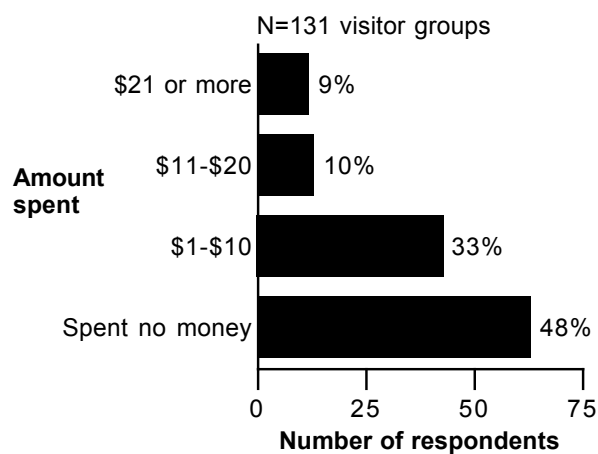


Figure 69. Expenditures for admission, recreation, entertainment fees inside the park

All other expenditures (souvenirs, books, postcards, sporting goods, clothing, donations, etc.)

- 48% of visitor groups spent no money on all other expenditures inside the park (see Figure 70).
- 35% spent \$1-\$30.

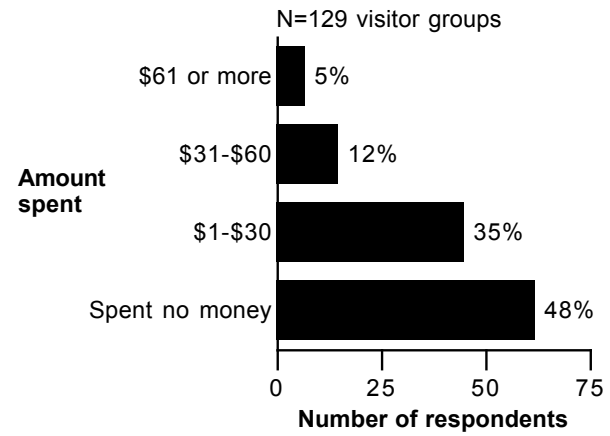


Figure 70. All other expenditures inside the park

Expenditures outside the park

Question 17b

Please list your personal group's total expenditures in the surrounding area outside the park (Alamogordo, Tularosa, Las Cruces)

Results

- 30% of visitor groups spent \$1-\$100 (see Figure 71).
- 21% spent no money.
- 18% spent \$101-\$200.
- The average visitor group expenditure outside the park was \$306.
- The median group expenditure (50% of groups spent more and 50% of groups spent less) was \$100.
- The average total expenditure per person (per capita) was \$107.
- As shown in Figure 72, the largest proportions of total expenditures outside the park were:

34% Lodge, hotel, motel, cabin, B&B, etc.
21% Restaurants and bars
15% Gas and oil

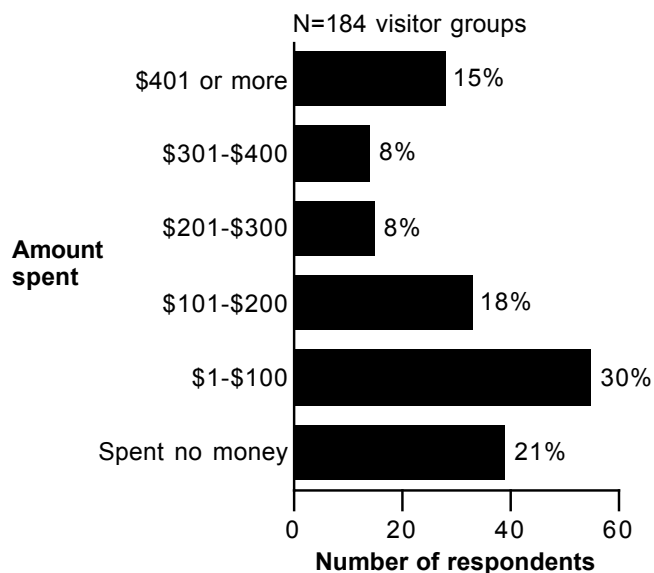


Figure 71. Total expenditures outside the park

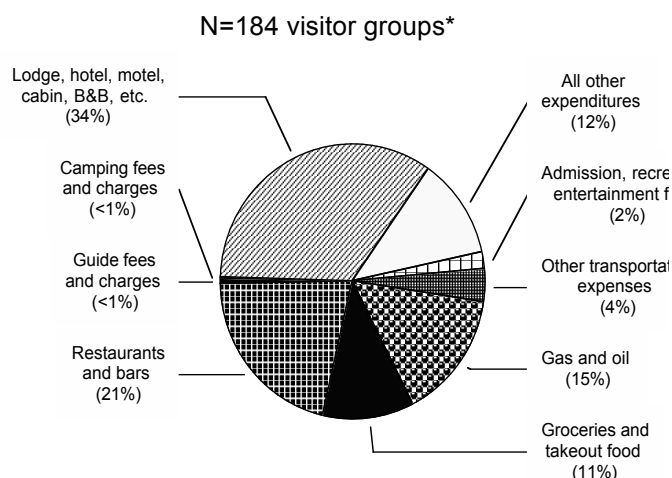


Figure 72. Proportions of total expenditures outside the park

Lodge, hotel, motel, cabin, B&B, etc.

- 50% of visitor groups spent no money on lodging outside the park (see Figure 73).
- 24% spent \$1-\$100 or more.

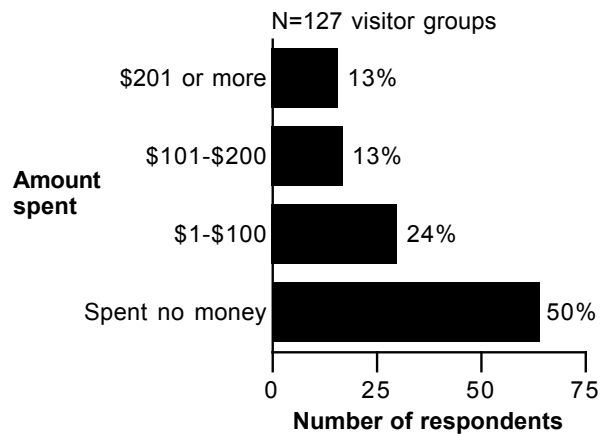


Figure 73. Expenditures for lodging outside the park

Camping fees and charges

- 88% of visitor groups spent no money on camping fees and charges outside the park (see Figure 74).
- 7% spent \$1-\$10.

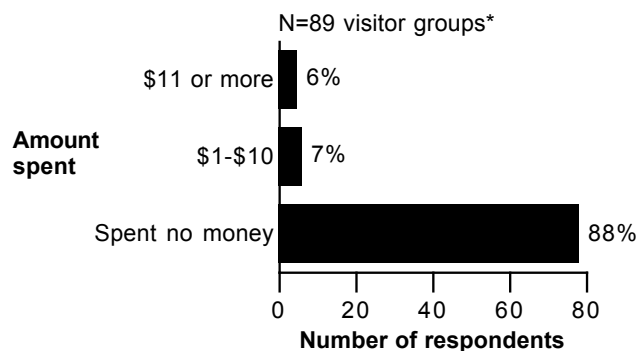


Figure 74. Expenditures for camping fees and charges outside the park

Guide fees and charges

- 96% of visitor groups spent no money on guide fees and charges outside the park (see Figure 75).
- 2% spent \$11 or more.

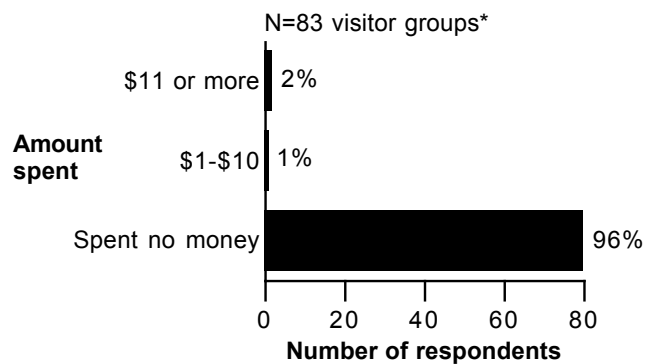


Figure 75. Expenditures for guide fees and charges outside the park

Restaurants and bars

- 37% of visitor groups spent no money on restaurants and bars outside the park (see Figure 76).
- 31% spent \$1-\$50.

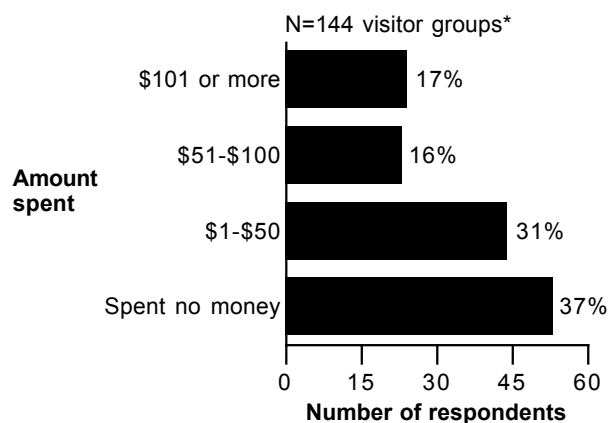


Figure 76. Expenditures for restaurants and bars outside the park

Groceries and takeout food

- 43% of visitor groups spent no money on groceries and takeout food outside the park (see Figure 77).
- 20% spent \$41 or more.

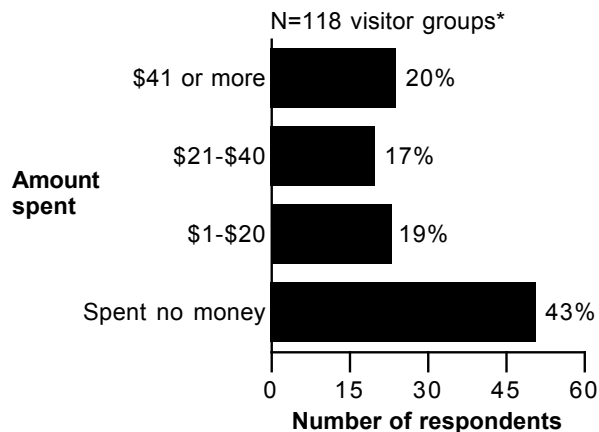


Figure 77. Expenditures for groceries and takeout food outside the park

Gas and oil (auto, RV, boat, etc.)

- 39% of visitor groups spent \$1-\$50 on gas and oil outside the park (see Figure 78).
- 31% spent no money.

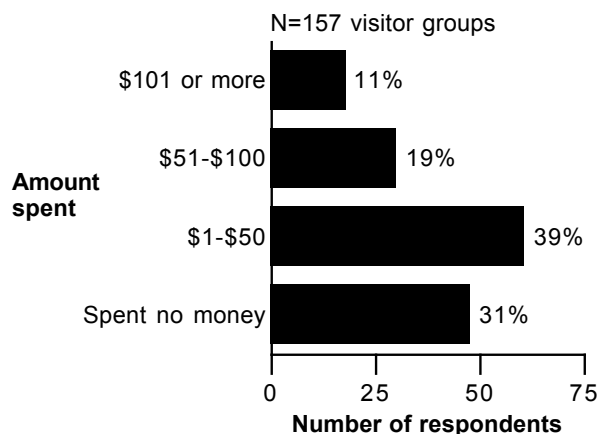


Figure 78. Expenditures for gas and oil outside the park

Other transportation (rental cars, taxis, auto repairs, but NOT airfare)

- 89% of visitor groups spent no money on other transportation outside the park (see Figure 79).
- 8% spent \$101 or more.

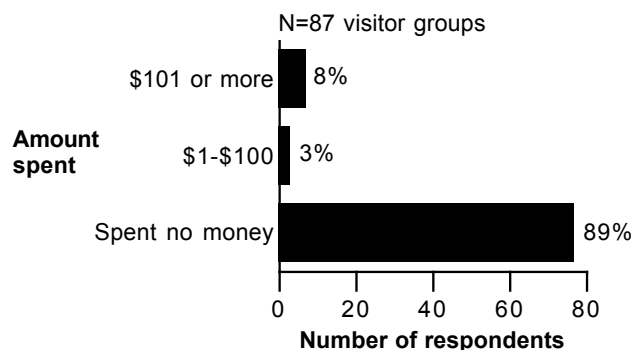


Figure 79. Expenditures for other transportation outside the park

Admission, recreation, entertainment fees

- 67% of visitor groups spent no money on admission, recreation, and entertainment fees outside the park (see Figure 80).
- 24% spent \$1-\$20.

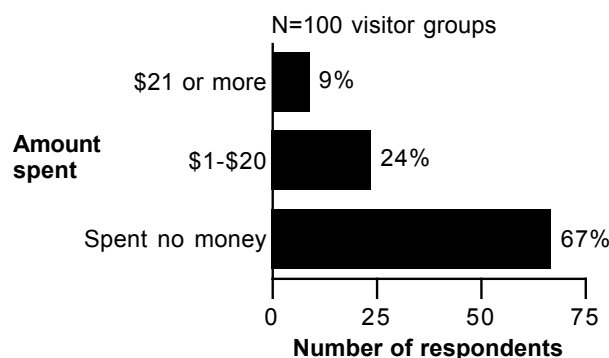


Figure 80. Expenditures for admission, recreation, entertainment fees outside the park

All other expenditures (souvenirs, books, postcards, sporting goods, clothing, donations, etc.)

- 54% of visitor groups spent no money on all other expenditures outside the park (see Figure 81).
- 29% spent \$1-\$50.

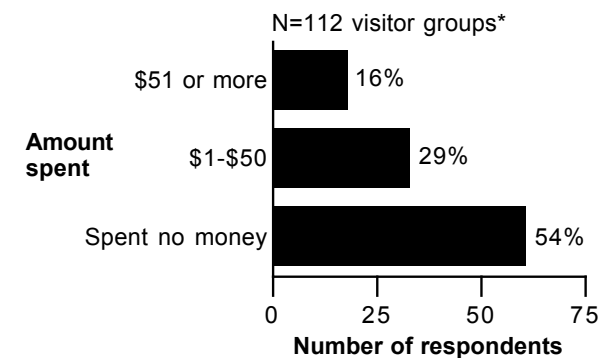


Figure 81. All other expenditures outside the park

Income forgone to make this trip

Question 23c

How much income did your household forgo to make this trip (due to taking unpaid time off from work)?

Results

- 21% of visitor groups had forgone income to make this trip (see Figure 82).
- The amount of income forgone is shown in Figure 83. Interpret results with **CAUTION!**

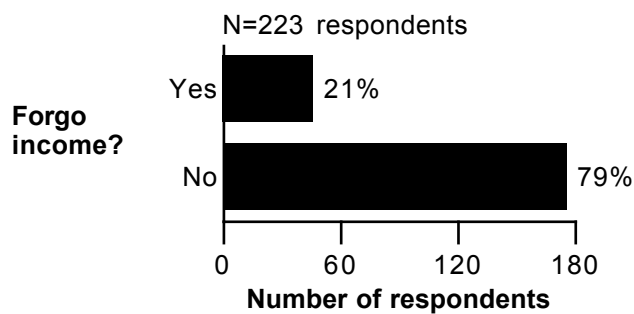


Figure 82. Income forgone to make this trip

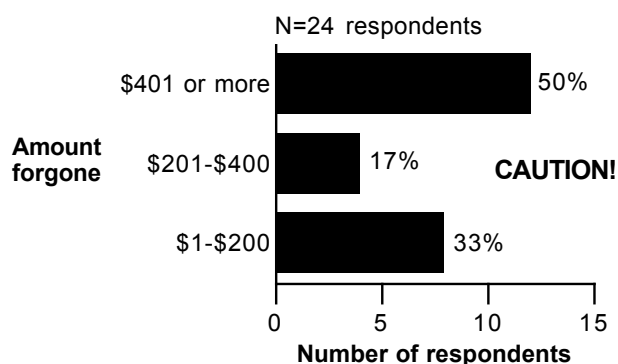


Figure 83. Amount of income forgone

Preferences for Future Visits

Ranger-led programs on future visit

Question 14a

If you were to visit White Sands National Monument in the future, would your personal group be interested in attending ranger-led programs?

Results

- 57% of visitor groups would likely be interested in attending ranger-led programs on a future visit (see Figure 84).

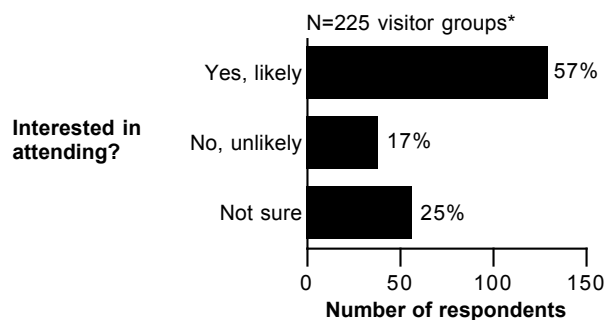


Figure 84. Visitor groups interested in attending ranger-led programs on a future visit

Question 14b

If YES, which length of program would your personal group prefer to attend?

Results

- 61% of visitor groups would prefer to attend a program with a length of 1/2 -1 hour (see Figure 85).
- 20% would prefer to attend a program with a length of under 1/2 hour.
- No "other" program lengths were specified.

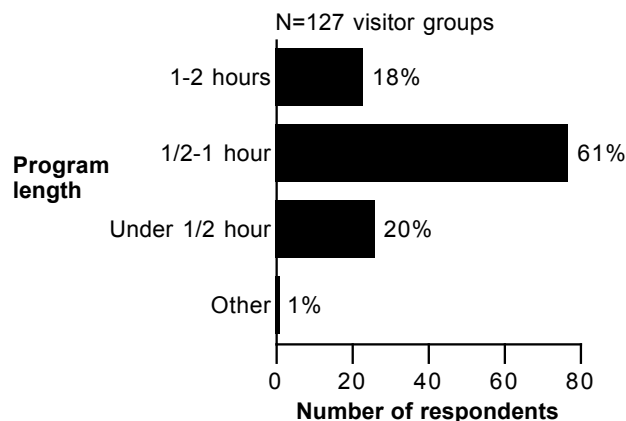


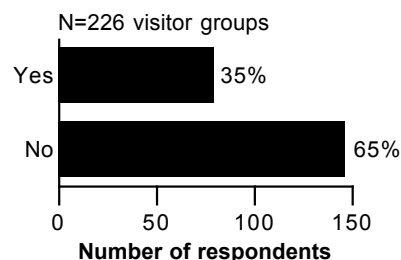
Figure 85. Preferred program length

Preferred interpretive services/programs on future visit

Question 15

If you were to visit White Sands National Monument in the future, what types of interpretive services/programs would your personal group like to have available?

Interested in
interpretive services/
programs?



Results

- 35% of visitor groups were interested in interpretive services/programs on a future visit (see Figure 86).
- Table 24 shows the interpretive services/programs that visitor groups would like available on a future visit.

Figure 86. Visitor groups that were interested in interpretive services/programs on a future visit

Table 24. Interpretive services/programs on future visit
(N=48 comments; some visitor groups made more than one comment.)

Service/program	Number of times mentioned
Ranger-led hikes	7
Ranger-led talks	5
Geology	4
Kid friendly programs	4
Programs translated to foreign languages	4
Stargazing	4
History	3
Native plants/animals	2
Archaeology	1
Astronomy	1
Biology	1
Gardening	1
General information	1
Hiking	1
History of park	1
Moonlight activities	1
Nature	1
Night visits	1
Off road electric car trips	1
Photography	1
Senior ranger program	1
Street side handicap-accessible exhibits	1
Wildlife	1

Overall Quality

Question 28

Overall, how would you rate the quality of facilities, services, and recreational opportunities provided to your personal group at White Sands National Monument during this visit?

Results

- 91% of visitor groups rated the overall quality of facilities, services, and recreational opportunities as “very good” or “good” (see Figure 87).
- 1% rated the quality as “very poor” or “poor.”

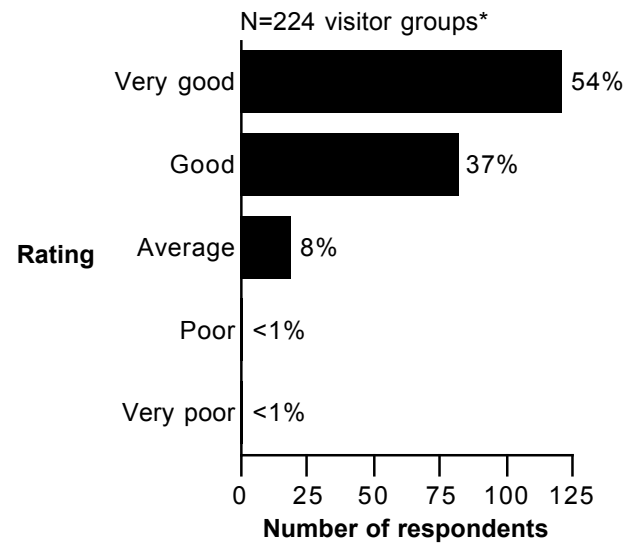


Figure 87. Overall quality rating of facilities, services, and recreational opportunities

Visitor Comment Summaries

Planning for the future

Question 26

If you were a manager planning for the future of White Sands National Monument, what would your personal group propose? (Open-ended)

Results

- 48% of visitor groups (N=108) responded to this question.
- Table 25 shows a summary of visitor comments. The transcribed open-ended comments can be found in the Visitor Comments section.

Table 25. Planning for the future
(N=129 comments; some visitor groups made more than one comment.)

Comment	Number of times mentioned
PERSONNEL (2%)	
Increased ranger presence	3
INTERPRETIVE SERVICES (13%)	
Night programs	3
Interpretive services in Spanish	2
More family programs	2
Other comments	10
FACILITIES/MAINTENANCE (22%)	
Cleaner restrooms	5
Expanded hiking trails	3
More shaded areas in park	3
Improved signage	2
RV campsites	2
Other comments	13
POLICY/MANAGEMENT (22%)	
Continued preservation of park	4
Increased advertising	4
Conservation	2
Expanded hours	2
Other comments	16
RESOURCE MANAGEMENT (2%)	
Comments	2
CONCESSIONS (2%)	
Comments	2

Table 25. Planning for the future (continued)

Comment	Number of times mentioned
GENERAL (38%)	
Continue as is	21
Not sure	3
Spend more time	3
Education	2
More social events	2
Other comments	18

Additional comments

Question 27

Is there anything else your personal group would like to tell us about your visit to White Sands National Monument? (Open-ended)

Results

- 47% of visitor groups (N=107) responded to this question.
- Table 26 shows a summary of visitor comments. The transcribed open-ended comments can be found in the Visitor Comments section.

Table 26. Additional comments

(N=151 comments; some visitor groups made more than one comment.)

Comment	Number of times mentioned
PERSONNEL (6%)	
Helpful park staff	3
Friendly park staff	2
Other comments	4
INTERPRETIVE SERVICES (6%)	
Learned much	2
Offer more educational opportunities	2
Other comments	5
FACILITIES/MAINTENANCE (12%)	
Restrooms need cleaning	5
Expand restrooms	2
Park is clean	2
Other comments	9
POLICY/MANAGEMENT (7%)	
Increase advertising	2
Park has improved	2
Other comments	6
GENERAL (70%)	
Enjoyed visit	43
Great park	12
Beautiful	10
Love the park	7
Will return	7
Thank you	4
Survey is too long	2
Other comments	20

Visitor Comments

This section contains visitor responses to open-ended questions.

Question 26

If you were a manager planning for the future of White Sands National Monument, what would your personal group propose? (Open-ended)

- #1-#15 I would make the poles on the hike trail. Post #1, Post #2 this will help beginners a way of deciding how far to go. I would provide more information regarding distances in a visible place.
- A tour in a train-like carrier used at Disney to ferry people to their cars.
- A wave pool
- a) Invest more in marketing; get the word out about this great place. b) Invest in more rangers to ensure that visitors learn about the importance to take care of our natural resources
- Add another entrance off of Highway 54
- Allow time to do ranger tour and hike trails
- An area where people could ride dirt bikes. Limited #, fee, limited track. No quads they destroy sand dunes.
- Availability of a water fountain so that purchase of \$1.50 water bottles not necessitated
- Better facility
- Birthday party, event affairs, group meetings, catered by park only, to take care of park
- Brochures/information in more languages
- Building stairs to get to top of a few dunes for easier sledding
- Clean a little more, trash in certain areas
- Cleaner bathrooms, more attendants on site
- Cleaner porta-potty
- Cleaner restrooms please, sorry but they were not NPS quality
- Company get together
- Concessions out at dunes, constant ranger visits at dunes and all locations/sled rentals
- Constancy in park management and growth in areas of technology and outreach
- Continue current plan
- Continued preservation, education, raise awareness of site
- Credit card machine at entrance - we would have bought annual pass
- Do away with sleds, keep it simple - natural beauty to enjoy
- Doing a good job already - would focus on maintaining the quality and services already offered
- Education and conservation
- Enjoyment, recreation
- Environmental management and protection. Maintain present condition. Monitor visitor's behavior.
- Find other offerings that attract more visitors to auto support the park financially
- Fine as is
- Full moon night
- Good question
- Harsh penalty on people who litter. Movies and concerts at night.
- Have fun
- Have more entertainment for the kids, keep restrooms clean and more available
- Have water accessible in park!

- Heard of Grand Canyon on back of East Coast but not White Sands National Park - promote/advertise more
- Hotel accommodation at park entrance
- I would plan to keep the national monument as it is now
- I would propose doing some background research on the park in regards to why the white sands and its proximity to the missile site and the wildlife present at the park
- Improvement in cleaning restrooms
- Increased monitoring of speed limits. Continued preservation of plants & wildlife.
- Keep it as is. Clean and patrolled.
- Keep it clean and safe
- Keep it like it is
- Keep it like it is - not too much touristic
- Keep it wonderful as is. I love the late summer hours.
- Keep managing the park, we love it
- Keep open to public
- Keep weed or vegetation growth off sand dunes
- Later park hours
- Let more people know the history of the group who built the monument buildings!
- Lodging other than tents
- Longer hours
- Lunch stop/picnic/fun
- Maintain current services - it's a great attraction and seems well-managed
- Maintain the cultural and natural reserves
- Mark, more clearly, and further away, missile test closures
- Maybe a shaded area of some kind out in the park
- Maybe make another loop or two like Alkali flat trail. Keep information on native species. Very informative.
- More camping and acreage open to the public
- More chemistry for exhibition - sand is quartz, other "sands" may be other compounds like gypsum $\text{CaSO}_4 \times 2\text{H}_2\text{O}$ - it's possible to demonstrate crystal growth. And maybe to show experiment $\text{CaSO}_4 \times 1/2 \text{H}_2\text{O} \rightarrow \text{CaSO}_4 \times 2\text{H}_2\text{O}$ known from every day life for more advanced students. It is possible easy to show chemical difference between gypsum and other "sands" ex. silica etc. That is an opportunity to show different levels of white. It is amazing how many different "white" colors are in our environment. It would be fine to organize small zoo with species typical for this area (white lizard, birds). It is not possible (or very difficult) to see them in habitat.
- More fun activities
- More hiking trails and possibilities to enter deeper into the park
- More info on sledding - continued preserving of park, geological/geographical features
- More info on things to do or rentals available such as sledding the dunes
- More programs for families and kids
- More shaded areas or lights would be nice
- More signage throughout the park telling people not to step on vegetation and do not take anything from the park
- More social functions i.e. "Day at the Sands" (many years ago, WSI Balloon Festival)
- More trails like Alkali Flats
- Natural sights

- Night programs. Shade shelter at Alkali Flats, consistent mile markers.
- None
- None
- None at this time. We like what is offered.
- Not sure
- Not sure
- Nothing - it's perfect
- Ok as is
- Orientation film be available for viewing on automatic on-going basis
- Plan for more outdoor activities (music, stargazing, hiking, etc.) early mornings or late afternoons
- Preserve what's there
- Rent sleds for free
- RV camping in the park with electric and water and showers
- RV campsites
- Sell goggles - sunglasses and sand souvenirs
- Showers. Everything else was enjoyable.
- Sightseeing and education
- Sites to camp overnight and set up small telescopes for star observing
- Sorry no ideas
- Spend at least 2 days, stay overnight
- Spend more time sledding the dune
- Stargazing - didn't see anything on it
- Stay longer than three hours
- Stay overnight to be able to enjoy more during the night
- TV commercials within 300 miles emphasizing sledding the dunes and picnicking
- To bring our own sleds and campout to watch the sunset and stars
- To continue as doing now
- To keep it positive
- To keep negative growth at a minimum
- Tours in Spanish
- We all thought it was fabulous! Perhaps larger restroom facilities.
- We enjoyed it as it is - we appreciated getting access to and walking on the dunes - we will take greater opportunities to walk the trails next time.
- We really liked the park and the caliber of protection and customer use, e.g. children sledding. So more of the same.
- When we walked the Boardwalk Trail a family was walking outside the boardwalk. The sign posted is only in English and they were Hispanic. I know they didn't realize that they were not supposed to be off the boardwalk.
- Would stress the beauty of nature and promote conservation
- You are doing a great job - just keep it that way - thank you!
- You're doing just fine. Keep preserving a spectacular area. Next time I'll bring friends.

Question 27

Is there anything else your personal group would like to tell us about your visit to White Sands National Monument? (Open-ended)

- A guided tour in a bus with a ranger would be great and worth a fee
- A warning that the sleds really don't work unless you are a little kid
- Alkali Flat Trail and backcountry camping was amazing. Very beautiful. Fun place to photograph. Very unique.
- Always a must-see experience for our college groups
- Amazing experience
- Amazing place
- Amazing, beautiful, tranquil place! Don't change anything! Thank you for supporting.
- Amazingly preserved, breathtaking park
- An unforgettable experience, a huge natural playground for kids, a wonderful experience thanks to NPS
- Awesome
- Beautiful park
- Beautiful, would love to come back with my children and grandchildren
- By far the best park! From the highway I have to tell my friends, "Trust me it's amazing inside" and it always is! They are always surprised.
- Came from Tulsa, OK to LA. We were just passing through and thought it was a pretty spectacular place. We were glad we stopped.
- Cost of sleds is outrageous
- Enchanting place, helpful staff at visitor center
- Enjoyed doing Junior Ranger program as an adult. Thank you.
- Enjoyed every minute
- Enjoyed it a great deal. Last time through was probably around 1990-92. Considerable positive developments. Will stop by in the future if passing through.
- Enjoyed it. Much more than expected! Poor restroom at visitor center.
- Enjoyed very much
- Every morning the picnic tables should be power washed before opening. A little dirty.
- Excellent
- Friendly park rangers and exceptional bathroom facilities made our trip very enjoyable
- Good times, great sunsets
- Great as it is now!
- Great time! First time for most to ride Harley Davidson motorcycles over sand.
- Great visit
- Great visit, especially nice around sunset. Kids enjoyed sledding dunes.
- Great!
- Had a wonderful experience thank you for having the monument available for all to see
- Had quite a few "first-timers" on this trip who had a great time. Keep up your excellent work.
- I came as a teenager with my family and was super exciting to share this with my children. They loved it! My in laws had never heard of it and really enjoyed it too.
- I love White Sands
- I most enjoyed the hiking
- I would like to learn more about the weather (ex. how windy is it usually). The rangers were very helpful and informative.

- I would provide more information regarding distances in a visible place
- Is it possible to lower the temperature a bit? We liked it very much!
- It is a great monument. Great job.
- It is a wonderful privilege to be able to visit such a natural wonder of God's making
- It is amazing how we were able to enjoy all that nature
- It is an interesting place. We will better plan our visit next time and will attend ranger-led activities.
- It was a great place and perfect time
- It was beautiful
- It was beautiful and clean. Would have camped but there was a missile test.
- It was fun to go back
- It was great
- It was great. It would be nice to have neon lights to guide back to path every 150 yards.
- It was nice
- It was very beautiful. We had never seen anything like it before.
- It was very nice
- It's the first place I have felt alive since I moved back to the USA
- Just great
- Kids loved it!
- Love it
- Mark water faucet as potable. Rangers and concessionaire very pleasant.
- More promotion of White Sands
- More trash receptacles and more bathrooms throughout the park
- Much bigger/more than we expected - we sincerely wish we had devoted more time to White Sands.
- Need picnic benches and more bathrooms, clean bathrooms!!! They were filthy.
- Nice visit. Not good to eat - sand blowing all over the place.
- Nice, quiet visit. Just like I like it! Bathrooms really smell BAD.
- No, just that we look forward to our weekly visit. The park personnel are wonderful.
- People love it!
- Perhaps all day courses on nature geology (paid for by participants)
- Possibility to stay later in the park for stargazing activities, etc.
- Provide tips for the best sledding; hard sand is best
- Rental equipment for sledding
- Restrooms at visitor center poorly maintained
- Restrooms unclean, need to keep restrooms clean!
- Tell the park rangers to be more courteous and friendly!
- Thank you
- Thanks
- The information pull-off areas with signs should be a little more off the road and the signs larger.
- The new video is excellent and quite inspirational
- The weather was ideal, breezy summer
- There have been tremendous improvements over the last 40 years!
- This survey takes to much time!!
- This survey was too long

- This was a two-week vacation that included Carlsbad Caverns, White Sands, Sedona, and the Grand Canyon, and Painted Desert. It was one of our many stops, and one destination that my wife and I have always wanted to see. We had a very good time there and will come back if possible.
- Trip too short, but had a great time! Seems to be very well run. Very clean.
- Very amazing to drive up and see all the sands in that little part of the world!
- Very enjoyable
- Very good trip
- Very interesting. Enjoyed looking for wildlife and tracks.
- We enjoyed it a lot!
- We enjoyed it! Even saw Matilda the camel.
- We enjoyed our visit
- We enjoyed the visit very much but we could not stay too long because of the temperature outside. We visited around the hottest time of day around noon.
- We had little time but we greatly enjoyed our trip
- We had to ask for info for our group's 6 children, in reference to youth programs offered. It should be easily offered.
- We had too much fun
- We have always loved our visits to the sands
- We learned the reason behind the White Sands name.
- We loved it and we are definitely coming back! What a beautiful place; more advertising should be done on this amazing place. P.S. Thank you so much for postcard with reminder about the questionnaire; it had slipped my mind once I got back to my daily routine in Houston, TX.
- We loved it! The member that had never been before was "blown away" by the beauty and experience!
- We really enjoyed our visit. We saw a rattlesnake and learned a lot on our ranger-led tour.
- We took our dad. He was a teenager last time he visited. Best trip ever.
- We travel all the time - just passing through today so no money spent in area
- We tried to phone about the ranger-led activities but were pushed to the Internet for times and we did not have access when traveling. There seemed no access to a human. Also the visitor center of Alamogordo was not well-informed. They just gave us your brochure; they should have timings of ranger events etc.
- We went into the visitor center and got information for our visit. We spent a week in Ruidoso and drove from there especially to visit White Sands. We did the driving loop and stopped to read all information signs. I used my golden pass for admissions. We thought it very interesting and enjoyable. The brochures we received at the visitor center were valuable.
- We were the only group on the dunes at 2:00 in the afternoon that hot July day - but the bulldozer had to work at the dune we were at. Ruined the fun and we left!
- We were totally impressed! We saw it on our map and decided to stop - it is absolutely beautiful! We look forward to returning some day.
- Went sledding with 3 dogs. Put in a train. It was hot! 12pm.
- Why US military is free or given a military discount but not affiliate? A bit disappointed as I was here to open my eyes to US culture. Other parks we went were free for using services.
- Wonderful environment for family and friends, beautiful setting (unique)
- Wonderful info available - very helpful staff

Appendix 1: The Questionnaire

Appendix 2: Additional Analysis

The Visitor Services Project (VSP) offers the opportunity to learn from VSP visitor study data through additional analysis. Two-way and three-way cross tabulations can be made with any questions.

Below are some examples of the types of cross tabulations that can be requested. To make a request, please use the contact information below, and include your name, address and phone number in the request.

1. What proportion of family groups with children attend interpretive programs?
2. Is there a correlation between visitors' ages and their preferred sources of information about the park?
3. Are highly satisfied visitors more likely to return for a future visit?
4. How many international visitors participate in hiking?
5. What ages of visitors would use the park website as a source of information on a future visit?
6. Is there a correlation between visitor groups' rating of the overall quality of their park experience and their ratings of individual services and facilities?
7. Do larger visitor groups (e.g., four or more) participate in different activities than smaller groups?
8. Do frequent visitors rate the overall quality of their park experiences differently than less frequent visitors?

The VSP database website (<http://vsp.uidaho.edu>) allows data searches for comparisons of data from one or more parks.

For more information please contact:

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Phone: 208-885-2585
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Email: lenale@uidaho.edu
Website: <http://www.psu.uidaho.edu>

Appendix 3: Decision Rules for Checking Non-response Bias

There are several methods for checking non-response bias. However, the most common way is to use some demographic indicators to compare between respondents and non-respondents (Dey 1997; Salant and Dillman 1994; Dillman and Carley-Baxter 2000; Dillman, 2007; Stoop 2004). In this study, we used five variable group type, group size, age of the group member (at least 16 years old) completing the survey, whether the park was the primary destination for the visit, and visitor's place of residence proximity to the park to check for non-response bias.

A Chi-square tests were used to detect the difference in the response rates among different group types, whether the park was the primary destination for this visit, and visitor's place of residence and proximity to the park. The hypothesis was that there is no significant difference across different categories (or groups) between respondents and non-respondents. If the p-value is greater than 0.05, the difference between respondents and non-respondents is judged to be insignificant.

Two independent-sample T-tests were used to test the differences between respondent's and non-respondent's average age and group size. The p-values represent the significance levels of these tests. If p-value is greater than 0.05, the two groups are judged to be insignificantly different.

Therefore, the hypotheses for checking non-response bias are:

1. Respondents from different group types are equally represented;
2. Respondents and non-respondents are not significantly different in terms of proximity from their home to the park;
3. Respondents and non-respondents are not significantly different in terms of reason for visiting the park;
4. Average age of respondents – average age of non-respondents = 0; and
5. Average group size of respondents – average group size of non-respondents = 0

As shown in Tables 2 to 5, the p-value for respondent/non-respondent comparisons for age is less than 0.05, indicating significant differences between respondents and non-respondents. The results indicate that visitors at younger age ranges (especially 40 years old and younger) may be underrepresented in the survey results, and visitors traveling with friends were underrepresented in the survey results. The differences, however, were not found in other variables. Results of the study in this report only reflect the simple frequencies. Inferences of the survey results should be weighted to counterbalance the effects of non-response bias.

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